THE LADIES' MAGAZINE

OF

GARDENING.

Paulownia imperialis.—The Foxglove tree

Day & Haghe Lith.rs to the Queen.

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GARDENING.

BY

MRS. LOUDON.

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LIST OF COLOURED PLATES.

LIST OF WOOD ENGRAVINGS.

LIST OF PLANTS DESCRIBED.

THE

LADY'S MAGAZINE OF GARDENING.

PAULOWNIA IMPERIALIS, *Sieb.* THE IMPERIAL PAULOFNIA, OR FOXGLOVE TREE.

Paulownia, *Sieb.* *Nat. Ord.* Scrophularineæ. *Lin. Syst.* Didynamia Angiospermia.

Generic Character.—Calyx campanulate, 5-cleft. Corolla tubularly campanulate, with a 5-cleft sublabiate limb. Stamens four, didynamous. Stigma truncate. Capsule woody, 2-celled, 2-valved. Valves septicidal. Seeds numerous, each surrounded by a wing, attached to a fixed placenta on the back of the dissepiment. Albumen fleshy.

Synonymes.—Bignonia tomentosa, *Thun.*; Incarvillea tomentosa, *Spreng.*

Engravings.—Kæmp. Amœn. p. 860; Fl. Jap. t. 10; and our Plate 1.

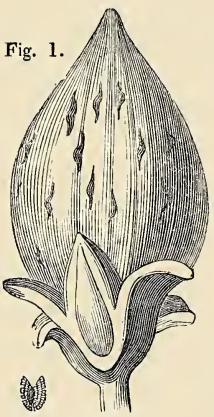
Specific Character.—Leaves ovate, cordate at the base, acute, undivided or 3-lobed, densely clothed with soft hairs beneath. Flowers panicled; calyx covered with rusty tomentum.

Description, &c.—This splendid deciduous tree, which is a native of Japan, grows, in its native country, to the height of thirty or forty feet, with a trunk two or three feet in diameter. The branches are few, but strong, and they proceed from the trunk at right angles. The leaves are very large and broad; and the flowers, which singly resemble those of the Foxglove, are produced in large terminal panicles, like the flowers of the Horse-chestnut or the Catalpa. At a little distance, indeed, the Paulofnia strongly resembles the latter tree, except in the colour of its flowers; but the seed-vessels are very different—those of the Catalpa being long horn-like pods, resembling in shape those of the Horn Poppy, and the seed-vessel of the Paulofnia being an oval-shaped nut (See fig. 1). The flowers of the Paulofnia appear in April, and they are fragrant. Their natural size is shown in the coloured plate, but with only a small floral leaf; but the size of the other leaves in proportion to the flowers is shown in fig. 2.

This valuable addition to our lawns and shrubberies, for it is quite hardy, was only introduced into England in 1840; but it has been

some years in Paris. In 1834 M. Neumann, the chief gardener in the Jardin des Plantes, received some seeds in a little China pot from Japan. The seeds being small, he sowed them in a flowerpot, which he placed in the hothouse, but only one seed vegetated. This plant he nourished with great care, but it grew slowly and appeared sickly. As he observed that after it lost its leaves in autumn, the heat of the stove made it bud again immediately, he felt convinced that the stove was too hot for it, and he removed it to the greenhouse, which evidently suited it much better, though still it grew slowly. He now took some cuttings from his plant, which struck readily; and he then ventured to remove the parent plant into the open air. It immediately began to grow vigorously; and though only six inches high when planted in spring, it became three feet high before autumn, growing with a strong erect stem, and forming a large bushy head. As soon as winter approached, it lost all its leaves at once, without their becoming withered, like the Catalpa and the Diospyros; but it regained them early in the following spring; and it has

Fig. 1.

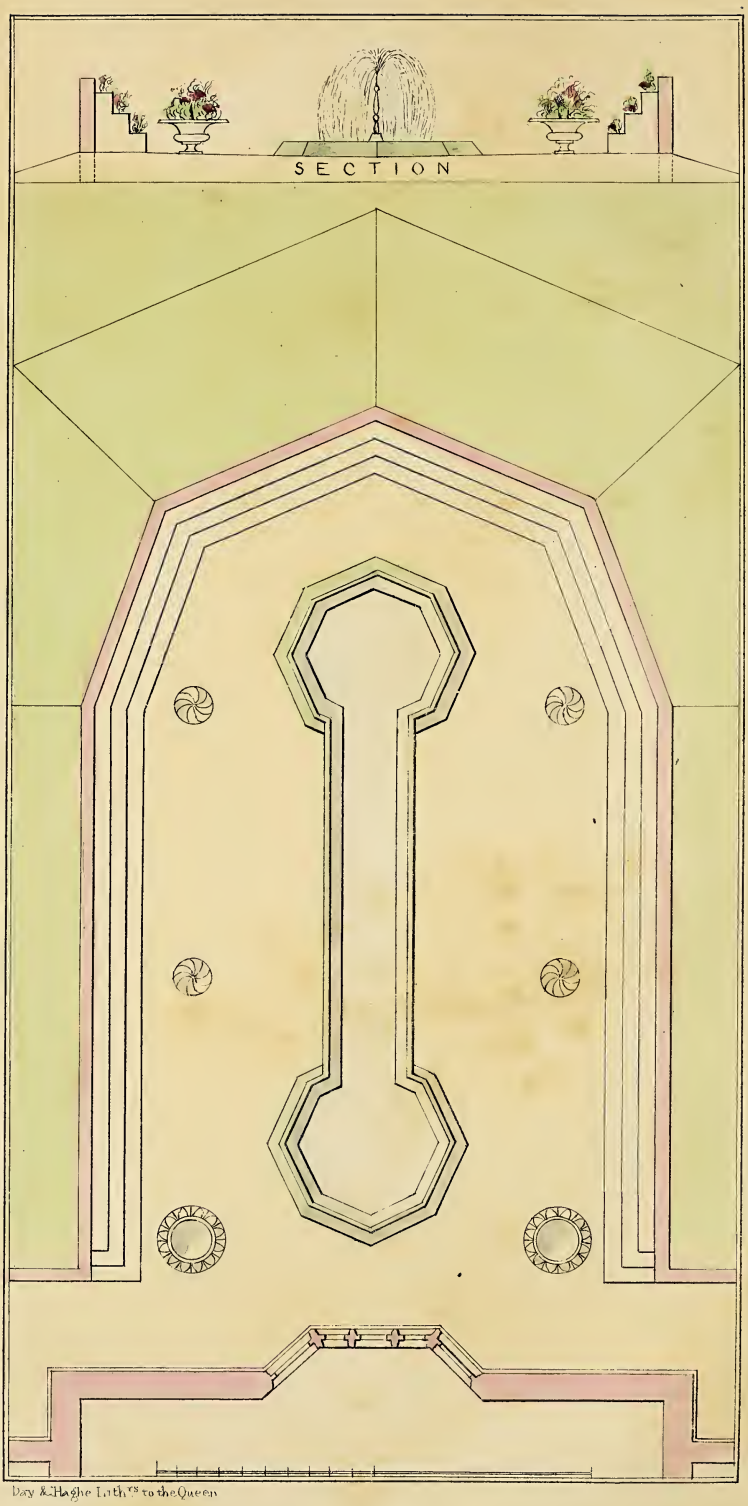


P. imperialis.

Fig. 2.

P. imperialis.

since grown so rapidly that it measured, when we saw it, in July 1840, very nearly twelve feet high. It was then growing vigorously, and had a profusion of fine large leaves, which cast a refreshing shade. M. Neumann protected it for several winters with mats, but he now finds it quite hardy; and in the winter of 1838-9, when the thermometer (Fahrenheit) was below zero (14° Reaum.), it did not lose even the tips of its branches. M. Neumann calls it the king of hardy trees, from its beautiful flowers and magnificent leaves, some of which, taken from the lower part of the tree in July 1840, measured fifteen inches in breadth and eighteen inches in length.



Day & Haghe Lith.rs to the Queen

This plant is called Kiri by the Japanese, and Too, or Hak-too, by the Chinese; and it was named *Paulownia imperialis* by Dr. Sieboldt, in honour of the hereditary Princess of the Netherlands, who was one of the daughters of the Emperor of Russia. It will grow in any common garden soil that is tolerably dry, and somewhat loamy; but in moist peaty soil the leaves turn yellow and fall off. It strikes readily from cuttings, and it may also be propagated by division of the root. The seeds which were imported from Japan were each surrounded by a kind of wing. They contain oil, and will probably not keep long.

There are specimens of this tree in the garden of the London Horticultural Society at Chiswick.

ON THE MEANS OF IMPROVING THE VIEW FROM THE WINDOWS OF A BACK PARLOUR IN A SUBURBAN VILLA.

BY CAPTAIN JAMES MANGLES, R.N.

In most suburban villas, and frequently in country residences, where there is a distant view, or some other pleasing object to contemplate from the windows of *one* of the sitting rooms, an unsightly wall, or some other objectionable feature, presents itself from the other.

To remedy this evil, and likewise to convert the defective frontage into a pleasing and ornamental picture, it is proposed to form an enclosed and terraced "lady's flower-garden," where immediately after rain she may step out, dry-shod, and enjoy the fragrance of her flowers, while their beauty and progressive development will be ever present from the window of her apartment.

Plate 2 shows the plan of an enclosed Italian terrace, communicating with a breakfast-room by means of a window with sashes on hinges, similar to a door, applicable to either a country villa or a London suburban residence. The terrace should be enclosed with a parapet wall, from three feet to four feet high; and the enclosed space may be laid with asphalte, or paved with Alhambra mosaic tiles, which are warranted to resist frost, and which may be obtained at Singer's manufactory on the Surrey side of Vauxhall Bridge. As these tiles may be had of any colour, those which form the pavement to be walked upon may be of a reddish-brown, to represent gravel; and this paved part may be of an amphitheatre-like shape, with three shelves round it of compost, each shelf being fronted with Alhambra tiles, or porcelain slabs, in long pieces about eight inches wide. These porcelain slabs, which are manufactured by Messrs. Copeland and Garrett, Portugal Street, may be either of a running

trellis pattern, or an imitation of the frieze of some classical entablature, as for example from the Elgin marbles, and as they are fixed in tin grooves they may be changed at pleasure. The space from the pavement of the terrace to the summit of the parapet wall may be lined with Alhambra tiles, of sea-green; and on the pavement there may be seven or nine vases filled with evergreens—as for example, an Arbutus, or a large plant of Acacia armata, which produces its yellow, ball-like, fragrant flowers in December and January, in the centre at the furthest extremity; and on the sides, plants of Acuba japonica, Sweet Bay, Laurustinus, and Portugal Laurel. On the summit of the parapet wall, should be seven other vases filled with similar plants; or with Kalmias, Azaleas, and Rhododendrons, when in flower; and these vases should be placed one over each of the five angles formed by the termination of the terrace, and one in the middle of each of the two sides. The shelves should be filled with the gayest flowering shrubs that the season will produce; and in the centre may be either a fountain or two basins, connected by a short canal for gold-fish. In the former case, the margin of the fountain should be covered with shells, tastefully arranged, and which may be procured at very reasonable prices, of Mr. Smith, Lowther Arcade, Strand; and some more rare and valuable shells for the foreground may be had at 282, High Holborn, where all the prices are marked on the shells. The fountain may be fed by a cistern in the house, and a great variety of forms may be seen at Austin's Artificial Stone Works in the New Road. One of an artificial Water Lily, with the water issuing from three tin jets in the form of buds, has a very good effect.

Should the canal with the two cisterns be preferred, and gold-fish should be kept, one of the cisterns should be made much deeper than the other, in order that the gold-fish may remain in it unmolested, while the other fountain is being cleaned out.

Cambridge Terrace, Victoria Gate.

ON ROCKWORK.

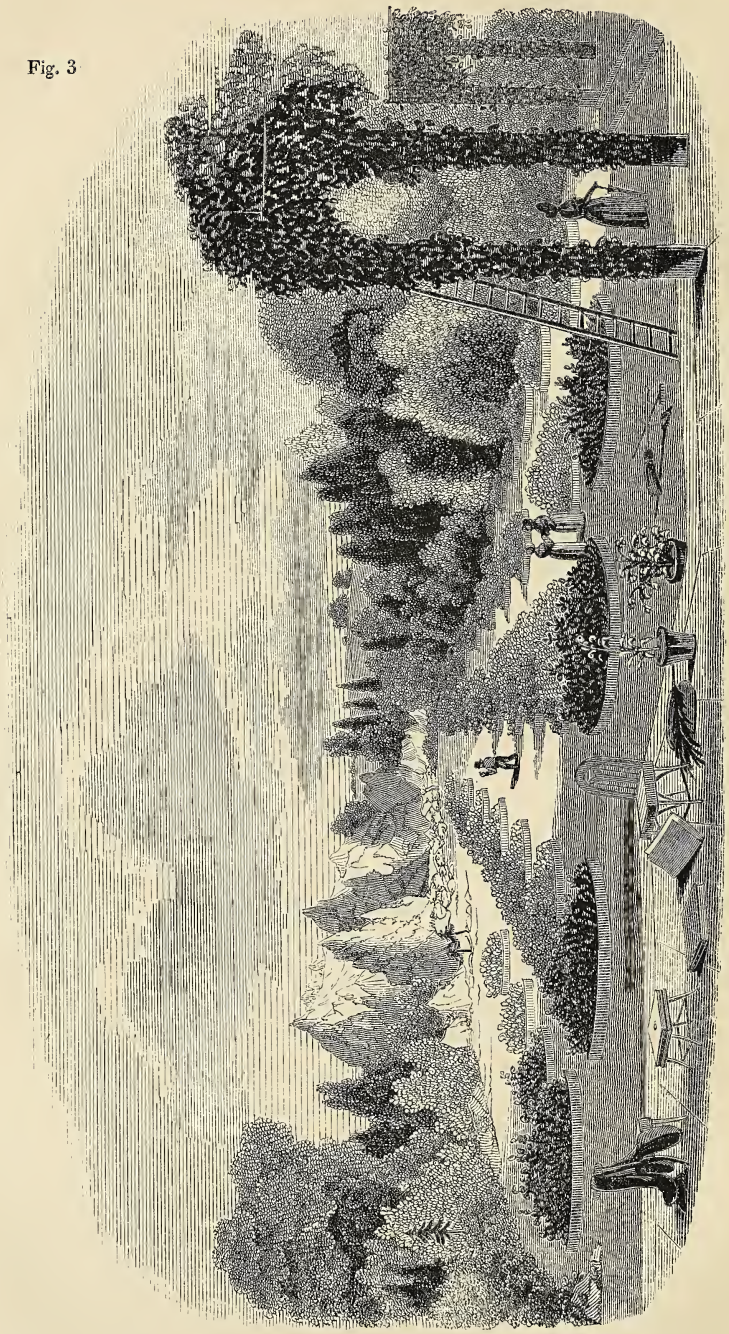
BY THE EDITOR.

Every one knows that rockwork is a collection of fragments of rock, stone, scoria from furnaces, and other substances, thrown together in an artist-like manner, so as to produce a striking and pleasing effect; and to serve as a nest or repository for the reception of Alpine and other dwarf plants. It may appear at first, that, as the collection of stones, &c., is designed to appear wild and irregular, little art would be required in its

construction; but this is so far from being the case, that perhaps rockwork is more difficult to design and execute than any other kind of garden scenery. It is, indeed, its near approach to a common and unsightly object that renders it so difficult to manage; for as it is, in fact, nothing but a heap of stones, skilfully arranged, and as nothing can be less beautiful than a heap of stones thrown carelessly out of a cart, it is consequently only by the display of human skill having been employed in its construction, that a heap of stones can be rendered interesting. Rockwork, therefore, to be beautiful, must be constructed on some regular plan; and it should always be based on a solid foundation, so that it should stand firmly, and not give the idea of instability, or of having been formed by accident. The first point, accordingly, to be attended to in making rockwork, is to fix it firmly in a natural rock; or, if this is impracticable, to build a foundation for it of brick, taking great care, however, that no portion of the wall shall be seen above the ground. This being done, the rockwork itself may be erected, a proper plan having been first determined upon, according to which it is to be arranged. What this plan may be must depend upon the taste of the designer; and to assist my readers in forming their designs, I propose in this, and in two or three other papers, to give a short account of some of the principal rock gardens in Great Britain.

Lady Broughton's rockwork at the Hoole, near Chester, is, perhaps, the most remarkable and best executed rock garden in existence. It is formed on a level surface, and consists of an imitation or miniature copy of the Swiss glaciers; with a valley between, into which the mountain scenery projects and retires, forming several beautiful and picturesque openings, which are diversified by scattered fragments of rock of various shapes and sizes, and by mountain trees and shrubs, and other plants. The design for the rockwork was taken from a small model representing the mountains of Savoy, with the valley of Chamouni; and a portion of ground adjoining the flower-garden having been chosen for its site, the foundation was built of red sandstone, that being the material most easily obtained in the neighbourhood. As the rocks were intended to be of a large size, the foundation was excavated to a considerable depth; and the foundation wall, of course, followed all the sinuosities of the plan. The next point was to get proper materials for forming the rocks, and this it was very difficult to do, as the design required the rocks in the Mer de Glace to be white, and glistening in the sun. These glaciers were imitated by large blocks of grey limestone, mingled with fragments of quartz and spar, and white marble to give the effect of snow; while the commoner kinds of stone, procurable in the adjoining part of Wales, were

Fig. 3



THE FLOWER-GARDEN AT HOOLE HOUSE, AS SEEN FROM THE TERRACE.

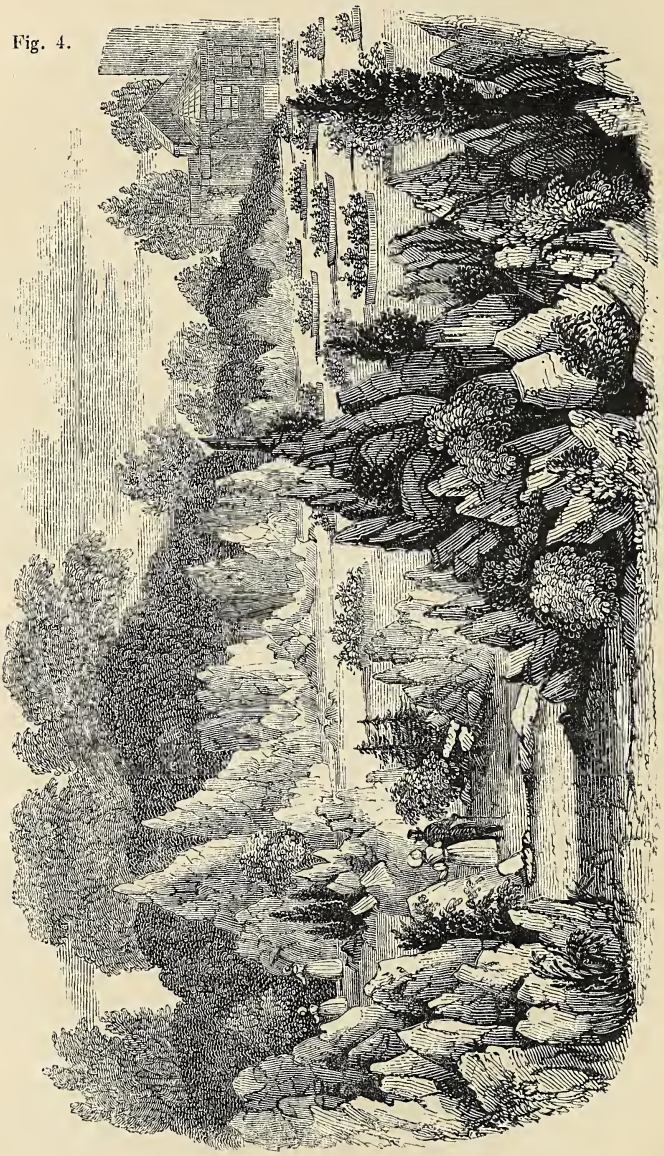
employed for the larger rocks. It will easily be perceived that it required the eye of an artist, combined with great good taste, to arrange these materials so as to produce the desired effect; as a single false step would have made the whole pass from the sublime to the ridiculous. Lady Broughton, however, has contrived to steer clear of the dangers that beset her, and has produced a scenic illusion perfectly unique of its kind. It is indeed quite impossible for any words or engraving to give an adequate idea of the singularity and beauty of this rocky boundary; and it is equally impossible to describe the care and thought which must have been required to bring the whole to its present state of perfection. Lady Broughton informed Mr. Loudon that it occupied a great portion of her time for six or eight years, and that it was a task of the greatest difficulty to make it stand against the weather. "Rain washed away the soil, and frost swelled the stones; and several times the main wall failed from the weight put upon it."

The flower-garden adjoining the rockwork consists of a series of circular flower-beds on a lawn; and these beds, which are filled with the rarest and choicest flowers, contrast strongly with the rocky boundary beyond them. (See *fig.* 3.) On passing through this garden, the stranger enters the open part of the rockwork, (see *fig.* 4.) which is planted with a collection of the most beautiful Alpine plants, particularly those of low growth; each is placed in a little bed of suitable soil, the surface of which is covered by broken fragments of stone, clean-washed river gravel, the remains of decaying moss, &c. according as the object is to retain moisture around those plants which are liable to be injured by drought, or to evaporate it from those plants which are likely to damp off; fragments of dark stone are also used to absorb the heat for those plants which require warmth; and fragments of white stone to reflect the heat from the roots of those which require to be kept cool.

Among the plants grown on the rocks, are several kinds of Saxifrage and Cistus; numerous Ledums, Heartseases, and different kinds of Violets, Anemones, Heaths, Campanulas, Alyssums, Hepaticas; various kinds of Snap-dragon and Toad-flax; several kinds of Columbines Asters, and wild Geraniums; the Forget-me-not, the beautiful little wall-plant Erinus alpinus, several kinds of Lychnis, and Anagallis, the Arabis or wall-cress, the Bugloss, Cheiranthus alpinus, with its tufts of pale yellow flowers, Cyclamens, Saponaria ocymoides, or Soapwort, Aubretia purpurea, Soldanella alpina, Polygala Chamæbuxus, Gaultheria Shallon; the dwarf Rhododendrons, viz. R. hirsutum, and R. ferrugineum, Thyme, the beautiful Gentiana acaulis, several kinds of Statice or sea-lavender, several kinds of Silene, the Perennial Flax, several Gysophilas, Hypericum or

St. John's wort, Restharrow, and many others. In this part of the rock garden, were several evergreen trees, consisting of the Irish yew, dwarf

Fig. 4.



THE ENTRANCE TO THE ROCKWORK AT HOOLE HOUSE.

American firs, privets, brooms, junipers, daphnes, and a few laurels, and laurestinus, mixed with hardy rhododendrons, and azaleas: care being

Fig. 5.

THE PART OF THE ROCKWORK WHICH IMITATES THE MER-DE-GLACE.

taken to introduce only such plants as grow on mountains, or in the valleys between the peaks of mountains, and to choose only the dwarf or slow-growing kinds, in order that their size might appear to agree with that of the rocks.

Advancing farther the trees and alpine plants, gradually disappear, till at length the stranger arrives at the part representing the "Mer-de-Glace," (see *fig.* 5,) where the imitation of the glaciers is so complete, that a sensation of coolness is felt even in the midst of summer. The wild irregularity of this scene forms so striking a contrast to the regularity of the flower-garden (see fig. 3, in p. 6,) that it is perhaps worth while to say a few words on the arrangement of the latter. The length of this flower-garden is sixty yards, and its breadth thirty-four yards, and it is perfectly level, with the spaces between the circular flower beds or baskets, of a fine smooth turf. The baskets, which are twenty-seven in number, are arranged in five straight rows; and each basket forms a circle, nine feet five inches in diameter. These baskets are made of wire, worked on an iron rod, which is placed on small pegs, so as to keep the lower part of the basket on a level with the grass, while the upper part stands about eight inches above it. The distances between the baskets are four feet across the garden, and eight feet ten inches down it; and they are planted with equal proportions of spring, summer, and autumn flowers, mingled with Geraniums, Verbenas, Petunias, German stocks, German asters, &c., so as to keep up the full brilliancy of colour during the whole of the flowering season. The house has a veranda round it (see *fig.* 6), with a Camellia house, and small conservatory entered from the living-rooms; with a terrace in front of the flower-garden, from which the flower baskets can be seen, with the rocks behind, without crossing the grass.

It is necessary to add that the Hoole is not a show place; and that Lady Broughton does not permit her grounds to be shown to any person with whom she is not personally acquainted.

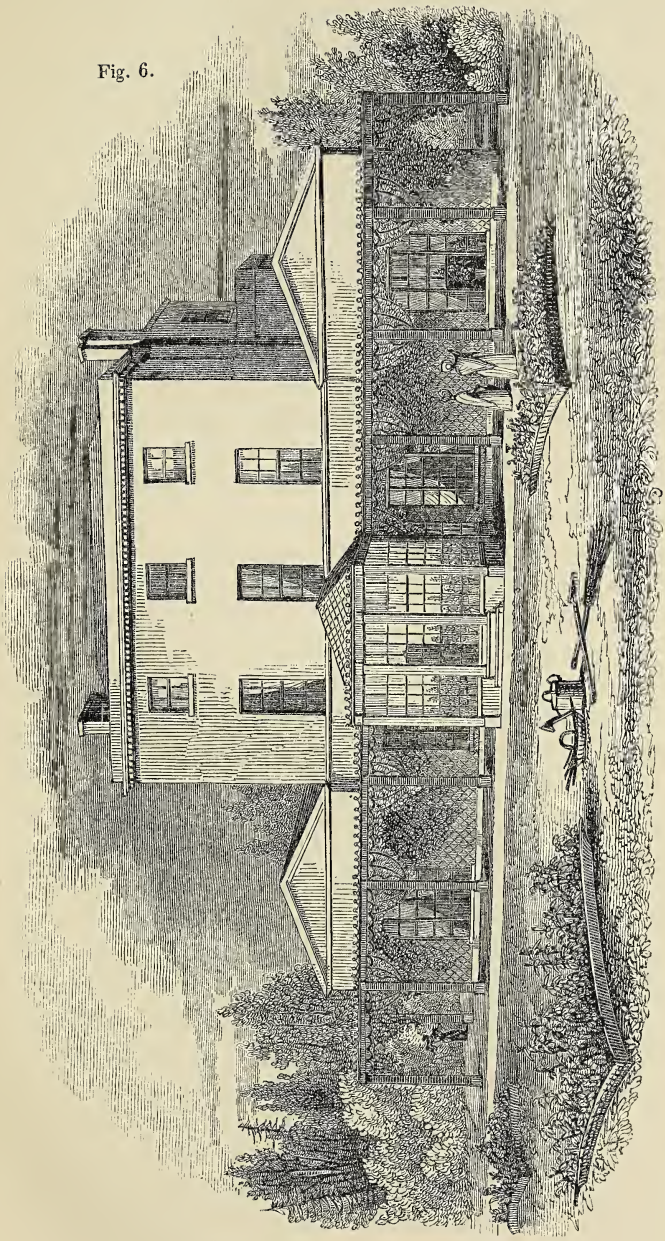
ON COLLECTING FOREIGN SEEDS.

BY MR. D. BEATON.

[Mr. Beaton is so well known among floriculturists as being one of the most scientific and intelligent gardeners of the present day, that every communication from him will be read with great interest. The subject is also a very interesting one, and every one who has received "seeds from abroad" must feel the truth and justice of his remarks.]

I HAD occasion lately to look over and arrange a parcel of East Indian seeds, for a lady who was visiting here; they were sent home by a private gentleman residing in India, who gathered the greater part of them himself. The collection was very choice, and what is very rare in such cases,

Fig. 6.



THE GARDEN FRONT OF HOOLE-HOUSE.

the packets of seeds were all botanically named. It is a common observation, that, if you get one good plant out of fifty kinds of foreign seeds, you may consider yourself fortunate. I have repeatedly sown five hundred kinds of foreign seeds without being so fortunate as to get one good plant out of the whole; and I have for years recommended those concerned, to get these seeds from residents, and if possible from such residents as know little or nothing about plants, because such persons never think of gathering seeds except of such plants as bear very striking flowers or foliage, or both; whereas a botanist is often content if he procures novelty, whether good or otherwise.

These seeds, containing about a hundred and fifty species, were gathered under the circumstances I have been recommending for a long time, yet, upon examination, I was quite disappointed with them; and as the lesson I have thus learnt may be of use to some of the readers of the *Ladies' Magazine of Gardening*, I think I shall be seconding your views, by sending you the following observations respecting them, to which I shall add, on a future occasion, some hints on sowing foreign seeds generally, and rearing the young plants.

These seeds were all of very good kinds, many of the plants to which they belonged bearing magnificent flowers, and others very sweet ones, and all of them possessing very desirable qualities; but unfortunately all of plants of so large a size, that after all the care and trouble that could be taken with them, the greater portion can be of no use whatever in this country, being seeds of some of the finest and largest trees of the Indian forests. After this example, I shall henceforth recommend that all foreign correspondents residing in tropical countries, the plants of which require a stove in Great Britain, may be requested to send the seeds not only of fine flowering plants, but those of moderate size. No seeds should be gathered of any tree which is more than from fifteen to twenty feet high; not including climbers, however, as plants of that description, though they may attain a great height in their native country, may be grown here for a long time in pots, before they get too high for our ordinary stoves. I would not be so particular with regard to countries the plants of which will thrive in the greenhouse; because, when plants get too large for a greenhouse, they may be planted out against a conservatory wall, which is the best way of treating tall showy greenhouse plants. I hope you, Madam, will strongly recommend this way of growing plants to your readers; and if you, through this Magazine, could enlist the ladies of this country in favour of conservatory walls, your work would do more real good than all the books on gardening put together.

Shrubland Gardens,
Nov. 27, 1840.

ON THE CULTIVATION OF THE CHRYSANTHEMUM IN THE OPEN AIR.

BY MR. ALLEN.

[In my *Instructions in Gardening for Ladies*, I mentioned that Mr. Loudon had told me that the best collections of Chrysanthemums he had ever seen growing in the open air, were those in two small street gardens, one belonging to Mr. Ingpen, Chelsea, and the other to Mr. Allen, Chapel Street, Edgware Road. Mr. Allen is the author of the following paper.]

THE Chrysanthemum is the flower for the months of November and December, as much as the rose is the flower for the month of June. We are indebted to our persevering countrymen for the great improvements they have effected within the last few years in this showy flower, and also to those who have repeatedly called our attention to its capabilities. I here beg to make an acknowledgement, which I trust will be a lasting record, to a gentleman who had the kindness to supply me with plants and to instruct me in their cultivation. The first idea which occurred to me of growing Chrysanthemums originated from reading an article in the Gardener's Magazine, by Mr. A. Ingpen, of Manor Street, Chelsea, who has a small inclosed piece of garden ground, the walls of which are adorned with thirty or forty varieties of the Chrysanthemum. On applying to be permitted to look at them, Mr. Ingpen immediately granted my request, and politely accompanied me himself. I need not say how much I was gratified by the splendid appearance which presented itself. Here were flowers of all colours, in the middle of November, luxuriating in the smoke of London, and within a stone's-throw of a brewhouse; imparting a liveliness to a small street garden of which I could have previously had no conception, and satisfactorily proving that there is not a plant better adapted for the numerous little London gardens than the Chrysanthemum.

The simplicity of its cultivation is another recommendation. Chandler of Vauxhall can supply all the best varieties both of his own and the new Jersey seedlings: the early kinds are most satisfactory. They should be all propagated in March, April, and May; and each root may be cut into as many pieces as there are suckers; they may be put separately into any kind of earth (loam is the best), in the sun or in the shade, and merely require to be kept moist; when they are sure to grow. You may also cut off slips, of which one root will furnish a dozen; insert them in flower-pots, three or four in a pot; and keep them moist, but not too wet, until rooted, when they may be transplanted into the open ground, near a wall fully exposed to the sun; keeping them six inches apart, and allowing one stem only to rise, which when two feet high will branch out, and afford at least an hour's amusement once a week in training to the

wall. The soil should be a fine rich mould, as good as can be easily obtained; and the growth of the plants will be exactly in proportion to the pains bestowed on their cultivation. In dry weather they will want an unsparing supply of water; it is true that they will live without it, but the effect produced by supplying them freely with water in a dry season will amply repay the trouble. The great tasselled yellow and incurved pink will flourish on a north wall; and I have seen them eight feet high in spots that do not receive a glance from the sun. Those who wish to decorate their greenhouses in November and December will find this flower particularly valuable, as its golden and silver blossoms expand in full perfection when protected from frost; and it is the true end of cultivation, to bring every flower we grow to the highest perfection of which it is susceptible. In order to reap the advantage of a greenhouse, the plants should be placed there about the end of September, and be well supplied with manured water, until the buds expand; and when thus treated it is no uncommon thing to see the blossoms double the size of their relatives in the open ground. The late Mr. Repton left directions for planting the rose over his grave, but if I were allowed to prescribe for the decoration of a similar dwelling-place, I should particularly wish it to be crowned with the golden Chrysanthemum.

ON THE CULTURE OF THE NEW AND SPLENDID PLANT, FUCHSIA CORYMBIFLORA,

BY MR. STANDISH, NURSERYMAN AT BAGSHOT, BY WHOM IT WAS RAISED.

The best way of growing this plant so as to make it flower well, is to prepare a bed about two feet deep in the open ground, with light rich soil; and in the month of May, when all appearance of frost is over, to turn the plant out of the pot into it. Thus treated, the plant, as it is easily excited to grow, will soon form a massive ball of roots, and a handsome head. When the flower-buds have formed, the plant may be taken up and potted (if it be thought desirable to remove it to the greenhouse to flower), without its sustaining any injury, if it is kept for a few days after its removal in a close place. This Fuchsia will also flower splendidly when planted at once in the conservatory border, if care be taken to have a place prepared for it, with a sufficiently deep and rich soil, as this plant is such a very strong feeder that it can hardly have too much room for its roots, or be planted in too deep or too rich a soil; and the more vigorously the plant grows, the more beautiful and more numerous will be its blossoms.

To have small flowering plants, cuttings should be taken off while the plant is in a flowering state, and put into thumb pots, which should be placed under a bell-glass. The cuttings will strike readily; and by shifting the plants two or three times into larger and longer pots, they will soon become bushy and well shaped, and will perfect fine racemes of flowers.

Fuchsia Corymbiflora is a very vigorous-growing plant, and considerably more hardy than F. fulgens, to which it bears considerable resemblance in form though not in colour. It is, indeed, apparently the hardiest fuchsia in cultivation; and it continues in flower much later in the season. The house my plants are now in is kept at from forty-five to fifty-five degrees of heat, and the plants are as luxuriant in their growth as if it were the middle of summer. There is a plant of F. fulgens in the same house, which has not only done flowering, but is losing its leaves and ripening its wood.

BAGSHOT,
December 7th, 1840.

ON FLOWER-SHOWS.

BY AN AMATEUR OF FLOWERS.

I HAVE long been an exhibitor at flower-shows, but I have lately seen so many unfair practices among the exhibitors of florists' flowers that I am almost discouraged from the pursuit. There can be no doubt that flower-shows in their original form were productive of great good. They are useful in exciting emulation, and in inducing many amateurs to cultivate flowers who would otherwise be too indolent to take the trouble. They do good to nurserymen, as they are the means of bringing new plants into notice more rapidly than they could be brought in any other way; for every person who sees a new and beautiful flower, feels a desire to possess it, particularly if it be much admired and talked about, which it is sure to be at a flower-show. These meetings are also very advantageous to gardeners, as their prejudices are softened down, and their manners ameliorated by mixing with other persons whose pursuits are the same as their own. When a gardener shuts himself up in his own garden, he can only benefit by his own experience; but when he hears the results of the experience of others, even though he may not choose exactly to imitate their practices, new ideas are raised in his mind, and something good is almost sure to be the consequence.

These advantages are, however, more than counterbalanced by the tricks often resorted to by the growers of florists' flowers. These flowers, like the overgrown and bloated cattle exhibited at cattle-shows, are more

calculated to surprise than to please. At first sight, we may admire the brilliant colours of a collection of Dahlias, but when these are repeated over and over again, the eye of the amateur becomes weary of the repetition of the same form, and he turns away to "metal more attractive." A man must indeed be a florist to understand the full perfection of florists' flowers; for their beauty, like the Canadian's French, is a different sort of beauty to that generally acknowledged and admired by all the world. Even when the objects to be aimed at are thoroughly understood, an amateur has little chance of success, when he enters into competition with professed florists; and consequently, we read the same names as the gainers of prizes over and over again in the newspaper accounts of provincial flower-shows, from one end of the kingdom to the other. To grow florists' flowers well, a man must devote his whole energies to the pursuit, and, unfortunately, so many tricks are practised, and so many difficulties lie in the way of the fair trader, that, like Lady Townly when she could hardly help swearing at the gaming-table, we find it very difficult to keep ourselves better than our neighbours.

I say nothing of the spirit of gambling which these contests engender, or of the bad feelings likely to be excited by want of success, or of the envy, hatred, and jealousy which the losing competitor is likely to feel towards his successful rivals; as these are obvious enough, and as it is hardly possible for any competition to exist without them. My aim has been to expose the folly of those amateurs who waste their time and money in a vain attempt to excel where they have very little chance of success. It is needless, however, to pursue the subject farther, as the unfair practices before alluded to will do more to disgust the public with Dahlias, than anything that can be written against them; and in a few years, probably, the Dahlia mania, like the mania of the prize ring, will be destroyed by the very persons whose greatest interest it was to support it, but who unfortunately forgot the old but useful adage—that honesty is the best policy.

Hammersmith,
Dec. 16, 1840.

THE HISTORY OF THE CHINESE CHRYSANTHEMUM.

BY THE EDITOR.

The first account we have of these beautiful flowers is contained in Rheede's *Hortus Indicus Malabaricus*, published in 1678; but in this work only one kind is described, which had flowers of a greenish ash-colour, and was grown in very sandy places. A more ample and much more interesting account of these plants is given in Kæmpfer's *Amœnitates*

Exoticæ, published in 1712, and which is a very curious book, written in Latin, and illustrated by copper-plates. This work contains, among other matters, a long description of the plants of Japan; one of which, that the Japanese call Kikf, and that Kæmpfer supposes to be a species of Matricaria, is evidently our Chinese Chrysanthemum. Kæmpfer describes thirteen varieties of this plant, ten of which, including the quilled-yellow and the cup-shaped white, are now common in British gardens; but three remain to be introduced there: one a procumbent plant, with clusters of small, very double cream-coloured flowers; another, a tall plant with large cœrulean blue flowers; and the third, a short bushy plant, with very fragrant yellow flowers.

Rumphius, in his *Herbarium Amboinense*, gives a long and interesting account of this plant. He says that the Chinese value the plant highly, and bestow great pains on its culture; and that they grow it in pots and jars, which they set upon their tables when they give entertainments. He adds that it is esteemed a mark of respect to present the finest flower to the most honoured guest; and as the extent and value of the compliment is estimated by the size of the flower, he tells us, that in order to produce these large flowers, the Chinese gardeners are obliged to check the growth of the plant, as, if it is left to itself, it grows tall and rude and produces little else but leaves; but that when it is made dwarfish, it produces abundance of flowers. He also tells us that each branch usually produces three blossoms, but that the Chinese pinch off two of these in the bud, which occasions the remaining flower to increase so much that it is often broader than a man's hand; and that if the same plant be suffered to remain more than two years in the same ground, it degenerates; for which reason, he continues, the Chinese raise new plants every year. He then says that three kinds were cultivated by the Dutch in Amboyna, but that the flowers did not expand well, because they were produced at the rainy season; and that they decayed without producing any seed.

This account is very curious on account of the details respecting culture, which agree so well with the practices and experience of modern days, as to afford another proof of what has been so often observed, that many of what we consider modern improvements, are in fact only revivals of the knowledge of our ancestors. But to continue the history of the Chrysanthemum. It is next mentioned by Thunberg, in his *Flora Japonica;* and he not only describes it in its wild state, but says that the extreme beauty of its flowers had made it cultivated in gardens and houses throughout the whole empire of Japan. The first of these plants is said to have been introduced into England in 1764, and from that period till within the last eight or ten years, nearly all the kinds of

Chrysanthemums grown in British gardens were importations from China.

The botanical name of the Chinese Chrysanthemum has been changed several times. The old botanists who first described it called it Matricaria, supposing it to be a kind of wild Chamomile. Linnæus called it Chrysanthemum indicum, which Mr. Sabine changed to C. sinense; Willdenow gave it the name of Anthemis artemisiæfolia; and Professor De Candolle has now removed it to the genus Pyrethrum, or Feverfew.

The culture of the Chrysanthemum, even at the present day, strongly resembles what Rumphius tells us of the practice of the Chinese; as it is found that it is apt to degenerate if not renewed frequently from cuttings, or transplanted, as it soon poisons the ground in which it grows. Manuring the soil with thoroughly rotten manure, or vegetable mould, will, however, generally prevent the necessity of removal. The cuttings should be made in spring, generally in April, and they will flower the same year; they should be taken off the points of the shoots, and three pairs of leaves should be taken off them, including those springing from the joint at which the cutting was cut off. The plants should be grown in light rich soil; and, if grown in pots, they should be frequently shifted to keep them bushy. In August or September they should begin to be watered with manured water or soap-suds; and if the flowers are wished to be very fine, the flower-buds should be thinned out as soon as they appear. The flowers against a wall, when expanded, should be slightly protected from severe frosts, which would soon destroy their beauty. There are two or three points to be particularly attended to in the culture of the Chrysanthemum. One of them is to water the plants copiously and regularly; and when the foliage flags, as it will do if exposed to the powerful heat of the sun, to sprinkle them all over their leaves with a fine rose watering-pot, lightly as a slight shower, sometimes as often as three times a day in the warmest weather. Sprinkling the leaves of the Chrysanthemum with water, even when the sun is full upon them, does not blister them, as it would do the leaves of most other plants, but increases their size and vigour wonderfully, and makes the plants, which are naturally very slow-growing, increase rapidly. Another thing to be attended to is never to set pots containing Chrysanthemums on coal ashes, as is often done with greenhouse plants to prevent worms from creeping into the pots through the holes at the bottom; and another is to manure the beds frequently in which the plants are grown in the open-air grounds, with rotten stable manure.

The number of kinds of the Chinese Chrysanthemum is so great, that it is impossible to give a list of the whole. In 1826, Mr. Sabine published

a list of forty-eight in the Horticultural Transactions; and in 1833, Mr. Haworth published a descriptive list of them in the Gardener's Magazine, classing them in the seven following divisions:—1, Ranunculus-flowered; 2, Incurved; 3, China Aster-flowered; 4, Marigold-flowered; 5, Clustered; 6, Tasselled; and 7, Quilled.

It is not known which was the first Chinese Chrysanthemum grown in England, as Miller is said to have cultivated one or two in the Chelsea Botanical Gardens in 1764, the names of which have not been handed down to us. These soon died; but in 1790, a plant of what is now called the old purple, was sent to Kew; and this kind having flowered in Colville's Nursery at Chelsea, in November 1795, was figured in the Botanical Magazine for that year. The old white, which is supposed to have been an accidental shoot from the old purple, was the next. After this many varieties were introduced from China, and some seedlings from France. The first person, however, that raised seedling Chrysanthemums in this country, was Mr. Wheeler, a nurseryman at Oxford, in 1832; and soon afterwards some varieties were raised in Jersey, which have proved so beautiful as almost to throw the old kinds out of cultivation. These Jersey varieties were raised by a person of the name of Webb, a confectioner in the island; and his whole stock, amounting to between three and four thousand seedlings, was purchased by Messrs. Chandler, who have selected the best, which they have sold under the name of the Jersey Chrysanthemums. Mr. Salter, of Versailles, has lately sent to England a number of seedlings raised in the south of France, some of which are said to be very beautiful; but as they were only introduced in the spring of 1840, and as the last winter was a very unfavourable one for Chrysanthemums, they have not yet flowered satisfactorily in this country.

The following is a list of some of the best Chrysanthemums grown by Messrs. Chandler:—

EARLY.

Queen.—The flowers double, and a little quilled, of a light rose-colour.
Marquis. — Pale rose-coloured, double flowers, produced in clusters.
Grandis.—Large flesh-coloured flowers, with flat florets.
Bicolor.—A dwarf plant, with small, very double, white and yellow flowers.
Vesta.—Large white, cup-shaped flowers.
Formosum.—Incurved white flowers with a lemon-coloured centre.
Imperial.—Large, incurved French white flowers.
Victory.—A dwarf plant, with large white flowers, that have the florets reflexed and flat.
Goliath.—Very large cream-coloured incurved flowers.

To these may be added the following, which are quite new:—

Beauty, with light pink incurved flowers.
Conductor, with buff or orange-coloured small flowers.
Phyllis, with small lemon-coloured flowers.
Floribundo, with quilled pink flowers.

LATE.

Chancellor.—Very large, pink and white, quilled and incurved flowers.
Elegans.—Rather small, but very regular, lilac flowers.
Empress.—Large pink tasselled flowers.
Pulcherrimum.—Rose-coloured flowers with white tips, very double.
Defiance.—Quilled, incurved, silvery-white flowers.

All these are Jersey varieties, and the late ones will remain in flower till the middle of January. Among the English varieties, the best are Wheeler's changeable yellow, clustered blush, and sanguinea. The Chinese varieties are thirteen in number, and are the following :—

Old purple,
Spanish brown,
Superb white,
Tasselled white,
Golden lotus-flowered,
Two-coloured red,
Superb clustered yellow,
Large quilled orange,
Tasselled yellow,
Changeable pale buff,
Pach's small yellow,
Tasselled lilac.

The above are early-flowering kinds, generally appearing in November; and the only late Chinese kind is the two-coloured incurved.

THE LACKEY MOTH.

BY THE EDITOR.

The caterpillar of this insect has received its name from its curious stripes, which resemble a kind of livery; and it is one of the most destructive creatures that can exist in a small garden, as it feeds on almost every kind of tree, evergreen as well as deciduous. Most of the destructive insects pay only periodical visits to our gardens; being plentiful in some seasons, and very scarce in others; but the lackey caterpillar is always abundant from April or May, to July or August. The moth is, however, very seldom seen, as it only flies by night, and always contrives to conceal itself during the day. It has no beauty to recommend it, as it is very small, and its wings are of a dingy reddish brown or dirty yellow, with a darker band in the middle. The eggs of this moth may be found during the whole winter, in the form of a broad bracelet round the twigs of the trees which have lost their leaves; and from which they can hardly be distinguished at a distance, so much do they resemble the bark in colour. This bracelet contains two or three hundred eggs, so firmly glued together that it may be slipped off the branch without separating them. The caterpillars are hatched in April or May, just about the time that the young leaves are developed, on which they are to feed; and almost as soon as they are hatched, they will be found in parties of from fifty to two hundred covered with a

silky net, which they have spun to serve as their covering. When disturbed, they let themselves down singly by threads to the ground, where they contrive to hide themselves. The insects moult three times, and about July they form themselves a cocoon, generally between two leaves, in which state they remain three or four weeks, till the appearance of the moth in August.

Fig. 7.

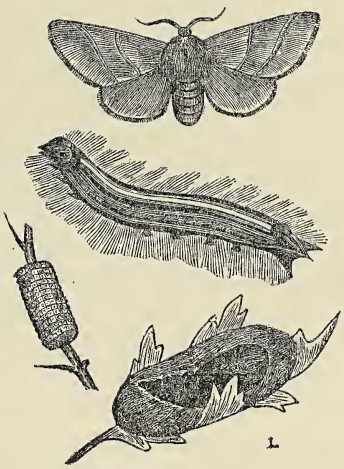


Fig. 7. shows the eggs on a branch; the caterpillar in its last state, when it becomes thickly covered with hairs; the cocoon; and the moth, which is of the natural size.

The best mode of preventing the ravages of these insects is to destroy their eggs; but when this has been neglected, the caterpillars should be sought for in May, before their third moulting; till which time they are always found in large assemblages, and are consequently more easily destroyed. The scientific name of this caterpillar was Bombyx neustria, but it is now generally called Clisiocampa neustria.

REVIEWS.

Instead of giving (as I intend to do in future), only an account of the plants figured in the Botanical periodicals for the last month, I shall begin with giving a short summary of the most beautiful plants which have been figured in them during the past year; and perhaps few years have been more prolific in splendid plants. As a proof of this I need only mention *Fuchsia corymbiflora*, (Bot. Reg. t. 70, December,) a Peruvian species, raised by Mr. Standish, nurseryman at Bagshot, and somewhat resembling *F. fulgens*, but very much handsomer, and *Ipomœa* or *Pharbitis Learii*, (Paxt. Mag. of Bot. January,) a Ceylon shrubby climber, which it is supposed will prove half-hardy, but which, in a stove in Knight's Exotic Nursery, King's Road, Chelsea, produced many thousands of blossoms during the summer of 1840, and continued flowering for several months in succession. *Thunbergia aurantiaca*, the orange Thunbergia,

and *Dendrobium Cambridgeanum*, with golden yellow flowers, also figured in Paxton's Magazine for January 1840, are splendid plants.

In the Botanical Magazine, perhaps the prettiest flower is *Senecio Heritieri* var. *cyanophthalmus*, (t. 3827, October,) a bright blue-eyed variety of the old plant formerly called *Cineraria lanata*. *Calectasia cyanea*, (t. 3834, November,) a very beautiful bright blue star-flowered plant, from King George's Sound, is figured from a dried specimen, the plant not being yet introduced. In the Botanical Register are *Mandevillea suaveolens*, (t. 7, February,) a climbing plant from Buenos Ayres, with large, white, bell-shaped, and very fragrant flowers; three kinds of *Impatiens*, or Touch-me-not, (t. 8 and 9, February, and t. 22, April,) all very tall-growing, half-hardy annual plants from Nepal, and two of them with rose-coloured flowers, and another is mentioned with large pure-white flowers; *Rigidella flammea*, (t. 16, March,) a bulbous plant, from Mexico, with bright scarlet flowers, which flowered in the Horticultural Society's garden, and also at Groom's, Walworth; *Epimèdium violàceum*, (t. 43, August,) a very pretty Alpine perennial, suitable for rockwork, which though not new, is little known, and which also flowered at Groom's; *Hibiscus Wrayæ*, (t. 69, December,) a greenhouse shrub, with large purple flowers, raised from Swan River seeds, by Mrs. Wray, of Cheltenham, and which has also flowered in the Horticultural Society's garden at Chiswick; *Batàtas betàcca*, (t. 56, October,) a singular-looking plant, with pale lilac flowers, having a very dark eye, and large heart-shaped leaves—it is a native of Demerara, but it is stated by Mr. May of the Ripon Nursery, who first had it for sale, to be hardy enough to stand in a greenhouse; *Lemonia spectábilis*, (t. 59, October,) a Diosma-like plant from Cuba, with small crimson, star-like flowers, which flowered in a stove, at Messrs. Loddiges', Hackney; *Bignonia Tweedidna*, (t. 45, August,) a beautiful bright yellow trumpet flower, from Buenos Ayres; *Aquilegia glauca*, (t. 46, August,) a sweet-scented Columbine, with large cream-coloured flowers, from the Himalayas; *Portulaca Thellusonii*, (t. 31, June,) a splendid half-hardy annual, nearly allied to Calandrinia, but with bright scarlet flowers, sent to the Horticultural Society from Italy; *Epidendrum vitellinum* (t. 35, June,) a Mexican epiphyte, with bright orange flowers; and *Tradescantia iridescens*, (t. 34, June), a little stemless, tuberous-rooted Mexican perennial, with large purplish flowers, very suitable for rockwork.

In Paxton's Magazine of Botany and Gardening, are *Curcùma Roscoedna*, (February,) a stove-plant, a kind of Turmeric, with dazzling scarlet and orange flowers, which has flowered with Messrs. Loddiges', Hackney, and with Messrs. Rollison, at Tooting; *Thysanòtis proliferus*, (March,)

a Swan River plant, with curious fringed purple flowers, at Mr. Lowe's nursery, Clapton; *Sinningia Youngeana*, (April,) a hybrid between *S. velutina* and *Gloxinia speciosa*, at Messrs. Loddiges'; *Cattleya labiata* var. *atropurpurea*, and *Corræa Harrisii*, (May,) both at Mr. Lowe's, Clapton, the Corræa with bright pink flowers; *Hibiscus multifidus*, (June,) a Swan River perennial, with deeply-cut leaves and pale blue flowers, at Messrs. Henderson's, Pine Apple Place, Edgware Road; *Dendròbium Devoniànum*, (September,) an East Indian epiphyte, with pink and yellow flowers; and *Lælia cinnabarìna*, with scarlet flowers, at Loddiges'; *Corræa longiflora*, with pink flowers, at Lucombe and Pince's, Exeter; *Phlox Coldryana*, a perennial, with very dark crimson flowers, from the British Nursery; *Cyclógyne canéscens*, a leguminous plant, from the Swan River; all four in the October Number. Two fine plates of beautiful old plants may also be mentioned; viz. *Blandfordia grandiflora*, in the November No.; and *Erica Banksiana*, in the No. for December. Both these are most beautifully executed; as indeed are nearly all the plates in the current volume of Paxton's Magazine.

In The Botanist, the most beautiful and newest flowers are *Hovea pungens*, (No. 164, April,) a very beautiful shrub, with rich dark blue flowers, from King George's Sound, at Messrs. Rollison's; *Acacia dentifera*, (No. 179,) a Swan River shrub, with yellow ball-like, stalked flowers, at Messrs. Rollison's; *Aquilegia fragrans*, (No. 181), an East Indian Columbine, nearly allied to *A. glauca*, (see p. 22,) but with still larger flowers; and *Solanum vestitum*, a Mexican plant with white flowers. To these may be added *Abutilon striatum*, a beautiful Brazilian plant, which was first figured in The Botanist, though in 1839, and which is now becoming common in greenhouses.

British Insects and their Transformations.—British Butterflies. Arranged and illustrated in a series of Plates, by H. N. Humphreys, Esq., with Characters and Descriptions by J. O. Westwood, Esq., F.L.S., &c. &c. London, 1840.—In Monthly Numbers, price 2*s.* 6*d.* each.

There is perhaps no study more interesting to the amateur florist (after that of botany) than that of entomology; and yet it is very seldom studied. Nothing is more common than to hear complaints of the ravages of caterpillars in a flower-garden, and yet nothing is more rare than to meet with an amateur florist who knows anything about the habits of these insects, or the means of destroying them. One reason for this apparent anomaly is the great difficulty which exists in identifying the insects in their three several stages of caterpillars, chrysalis, and butterfly, or moth, for want of some popular work on the subject;

almost all the books containing coloured plates of butterflies being not only very expensive, but generally containing only figures of the perfect insect. The present work bids fair to supply this desideratum; as the figures are beautifully coloured, and each butterfly has its caterpillar and chrysalis on the same plate, together with the plants on which it generally feeds.

As a specimen of the agreeable style in which the work is written, we may quote the following passage from the introduction by Mr. Humphreys:—

"During a recent tour through Italy I first conceived a predilection for the study of entomology. Early in the Italian spring, in the months of March and April, after a winter's residence in Rome, my favourite rambles were over the desert yet beautiful Campagna; and in these walks my attention was actively aroused by the profusion and variety of insect life, particularly of glittering butterflies, that in those early months already flitted over the flowery waste. As I stepped among tufts of the Alpine anemone, the crimson cyclamen, or purple squill, crowds of painted insects arose at every tread, as though a passing gust of wind had suddenly scattered a cloud of the many-coloured petals of the crushed flowers to the breeze. Later in the season the number still increased, and their brilliancy and novelty soon determined me to attempt the formation of a collection, reserving the classification and study till my return home; when I discovered that many beautiful species of Lepidoptera which I had deemed novelties were well known as indigenous to our own island: where, however, their comparatively unfrequent appearance had not forced them into notice, whilst in Italy their profusion had compelled attention. Such was the case with Papilio Machaon (the swallow-tail butterfly) as common on the Roman Campagna as the cabbage-white in our gardens. Mancipium Daplidice (the Bath white) and Pieris Cratægi (the black-veined white) were still more numerous; whilst the whole Campagna about mid-day received quite a golden hue from the rich orange colours of Goniapteryx Cleopatra and Colias Edusa, both of which were in such profusion that I actually took above twenty specimens of the latter species at once, upon a gigantic thistle on the road to Tivoli."

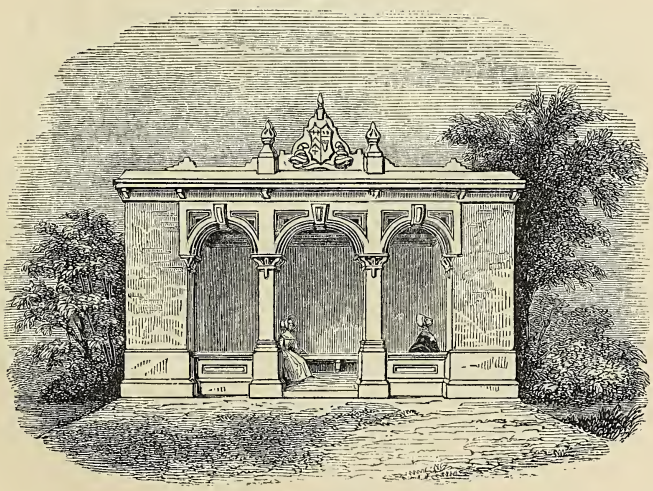
Of the butterflies mentioned in this extract, the swallow-tail, and brimstone (Goniapteryx), are figured in the first plate; Colias Edusa, the clouded yellow, in the second; the Bath white, in plate six; and the black-veined white, in plate seven. In conclusion, we have only strongly to recommend the work to our readers, not only for its utility, but for the extraordinary beauty of the plates.

THE DERBY ARBORETUM ; containing a Catalogue of the Trees and Shrubs included in it, a description of the Grounds, and directions for their management ; a Copy of the Address delivered when it was presented to the Town Council of Derby by its founder Joseph Strutt, Esq., and an Account of the ceremonies which took place when it was opened to the public on September 16th, 1840. By J. C. Loudon, F.L.S., H.S., &c. &c. London, 1840.

THIS pamphlet commemorates one of the noblest acts of a private individual that we have heard of for the comfort and enjoyment of the working classes. There have been many munificent gifts from private persons for the benefit of the destitute, sick, and infirm, and others for the education of the children of the poor, but this we believe is at present almost a solitary instance of a wealthy man wishing to provide for the permanent enjoyments of his poorer brethren. The working classes of the town of Derby are, in this Arboretum, admitted to the enjoyment of the same rights and privileges as the rich, and they and their descendants will have reason to bless the name of Mr. Joseph Strutt.

The first part of the pamphlet before us consists of a catalogue of the trees and shrubs botanically arranged, and with some popular and entertaining particulars of each, every plant having a brick tally, with a printed card let in, being the botanic and English names of the plant, and covered with glass. The second part of the pamphlet consists of a description of the plan and proposed management of the garden, and from this we shall make some extracts :—" The situation of the ground is in the outskirts of

Fig. 8.

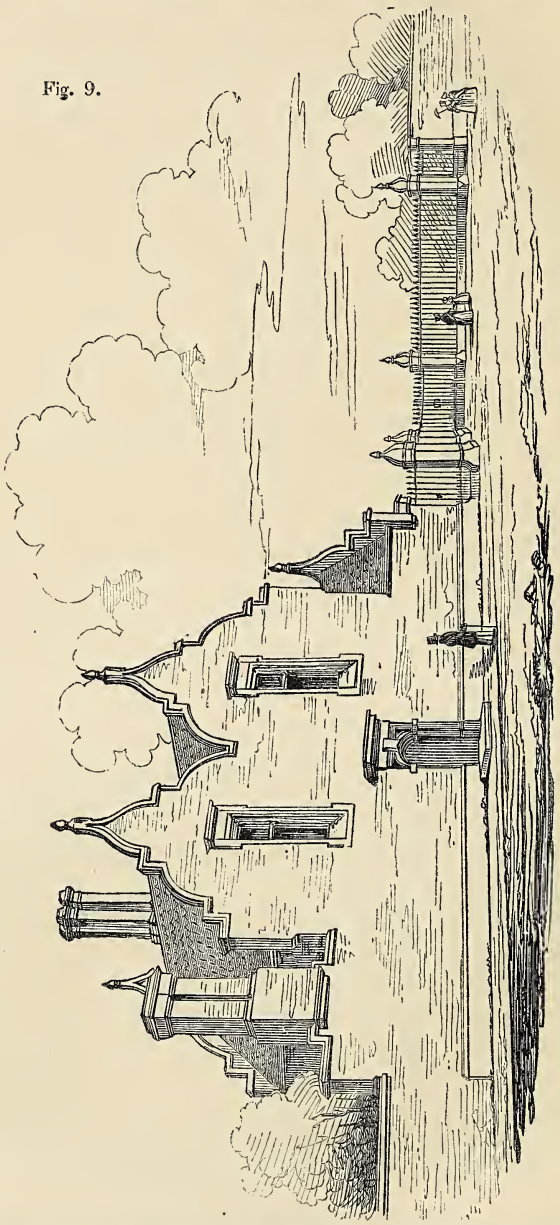


PAVILION.

the town ; the extent about eleven acres ; the form long, narrow, and irregular, surrounded by houses ; the surface is flat, and apparently

level, but with a very gentle inclination from the north-east to the south-west; and the soil is loamy, on a gravelly subsoil." Mr. Loudon then

Fig. 9.

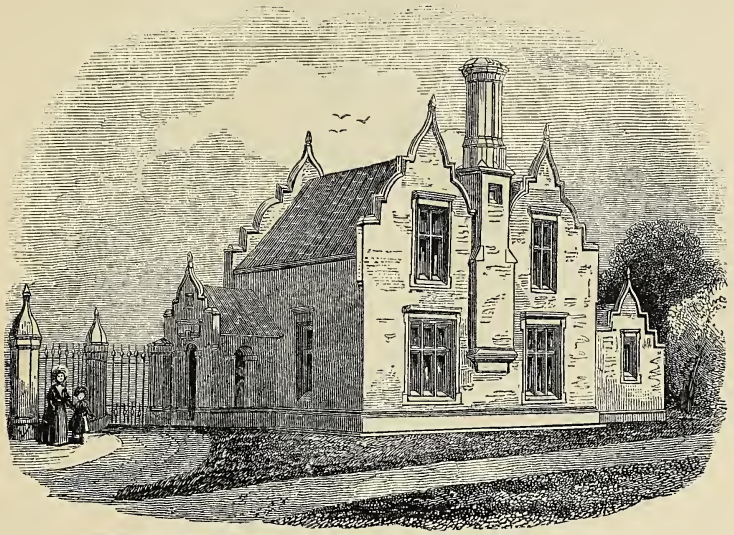


EXTERIOR VIEW OF THE PRINCIPAL ENTRANCE LODGE AND GATES TO THE DERBY ARBORETUM.

proceeds to describe the principal objects to which Mr. Strutt directed his attention in laying out the grounds, and he adds—" I have provided as

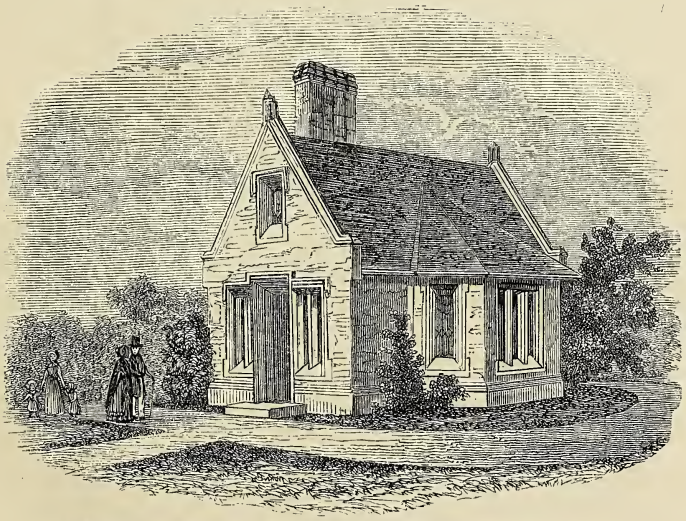
great an extent of gravel-walk as the space would admit of; the total length, including a walk round the flower-garden, exceeding a mile.

Fig. 10.



INTERIOR VIEW OF THE MAIN ENTRANCE TO THE DERBY ARBORETUM.

Fig. 11.

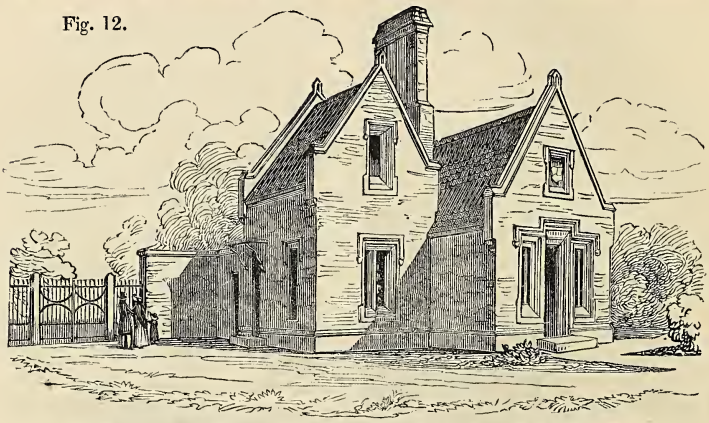


EAST LODGE OF THE DERBY ARBORETUM, SHOWING THE PUBLIC ROOM.

There is a straight broad walk in the centre, as a main feature from the principal entrance, one intersecting a broad and straight walk to form a

centre to the garden, and to constitute a point of radiation to all the other walks; and there is a winding walk surrounding the whole. As a straight walk without a terminating object is felt to be deficient in meaning, a statue on a pedestal is proposed for the first or radiating centre; a

Fig. 12.

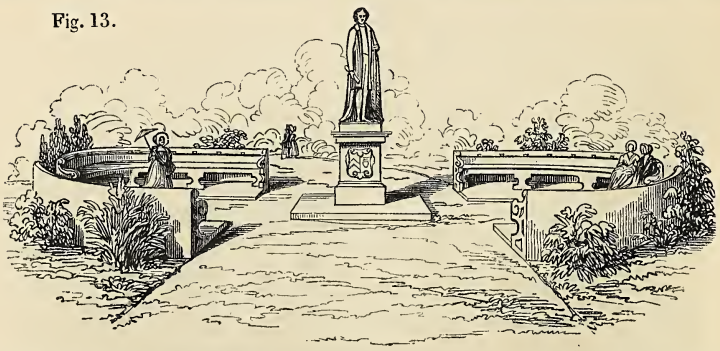


EAST LODGE OF THE DERBY ARBORETUM SHOWING THE ENTRANCE GATES.

pedestal, with a vase, urn, or other object, for the second circle in the straight walk; while the pavilion (fig. 8) forms a terminating object to the broad cross walk."

A handsome entrance lodge and gates (shown in fig. 9) lead into the garden from the town of Derby. Fig. 10 shows the appearance of this

Fig. 13.



DESIGN FOR A STATUE AND STONE SEATS FOR THE RADIATING CENTRE OF THE DERBY ARBORETUM.

lodge from the garden. Fig. 11 shows a public room for tea-parties, &c. at the east end of the Arboretum; and fig. 12 the entrance-lodge at the same end. Fig. 13 is a design for a statue of Mr. Strutt, which it has been proposed to erect in the second circle, formed in the central walk, but this is not yet decided upon.

The Derby Arboretum was assigned over to trustees by Mr. Strutt, on the 16th of September 1840; and the ceremonies which passed on that occasion, and on the succeeding days, will be found in the Derby newspapers of that week, in the *Gentleman's Magazine* for October, and at the end of the *Catalogue of the Derby Arboretum.*

QUERIES AND ANSWERS.

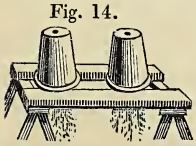
ON IMPROVING WILD FLOWERS BY CULTIVATION.

"An invalid lady living in a remote part of the country has long devoted herself to the cultivation of flowers. A great source of amusement has been to bring wild flowers into the garden, where they grow luxuriantly, but all the care and attention bestowed on them have not succeeded in making any of them double. The primrose, the daisy, and the buttercup, have long been denizens of her bushes; but all attempts have failed to produce even a variety in colour. Is there any truth in the old saying, that by planting a primrose with the head downwards it will change the colour of the flower? And what is the proper method of doing it? You would greatly oblige an humble admirer of your works, and one who rejoices to hear of your forthcoming Magazine for Ladies, by informing her, at the same time, how a primrose or polyanthus, daisy, &c., can be made double. Has that beautiful plant, the Chinese primrose, ever been seen double; and should the same method be pursued for a greenhouse plant as for a hardy one?"

London, Dec. 16, 1840.

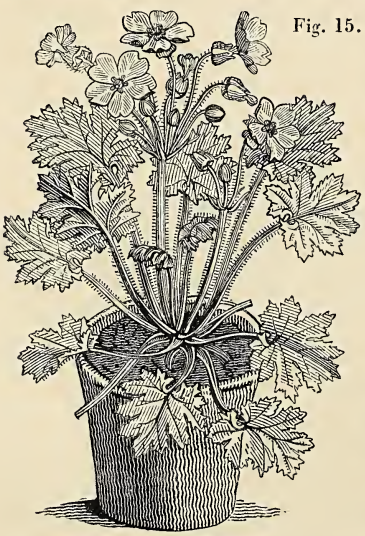
The old saying respecting planting the primrose with its head downwards, is, I believe, one of those popular errors which have been handed down from generation to generation, without any one taking the trouble to examine into their accuracy. Roses which have been forced, and some other plants in pots, are, however, frequently kept by gardeners with their heads downwards, (see fig. 14,) for some weeks after their season of flowering is over, in order to throw them into a state of perfect rest, and also to retain the sap in their branches; as if it were suffered to descend to the root after the violent excitement it had undergone in forcing, the plant would probably waste its strength in throwing up suckers.

Fig. 14.



The best method of changing the colour of any of the primrose family to red, is to water them with water in which cow-dung has been steeped; but sometimes the colour will change much more readily than at others. To make the flowers double, they should be grown in a very rich soil, composed of equal parts of loam and thoroughly rotten manure from an old hotbed, to which a little vegetable mould may be added. A small quantity of loam may be purchased for a shilling at many of the nurseries; as, for example, I buy what loam I want for my own plants, at Mr. Hopgood's nursery, Craven Hill, Bayswater, and I procure other soils, such as peat, silver-sand, &c., in the same manner. The vegetable mould is nothing but thoroughly decayed leaves sifted, and mixed with a little garden mould; and it may be omitted if it cannot be readily obtained. When the proper soil has been prepared by mixing it with a trowel or small spade in a box, or large flower-pot, a square hole or pit, about a foot deep, rather more than less, and a foot across, should be dug in the border, and it should be filled with the prepared soil, raising it a little above the general surface of the flower-beds, to allow for sinking. The primrose, or other wild flowers, should then be planted, taking care to spread out the roots carefully, cutting off any that may be bruised or otherwise injured, and not to bury the collar, that is, the part the roots spring from. The roots should then be covered, and the earth pressed lightly down, and the plant should be watered regularly twice a day in warm dry weather. This treatment will generally produce a striking effect on primroses, which it will render double and very beautiful; but daisies do not require it, and a double polyanthus is not admired so much as a fine single one. If it is wished to have the flowers very large, half at least of the buds should be pinched off as soon as they appear.

Fig. 15.



The Chinese Primrose.

Double Chinese primroses may be obtained at Mr. Henderson's nursery, Pine-Apple Place, Edgware Road; and they are very beautiful, particularly one, the flowers of which are quite white.

The common Chinese primrose (*Primula prœnitens*)—see fig. 15—is a very useful greenhouse or window plant at this season, as it continues in flower all the winter. It is very

nearly hardy, and only requires protection from frost. It is, however, very short-lived, as it is only a biennial; and though it sometimes lives three years, the same plant can seldom be preserved longer, and thus new plants should be raised every year, to succeed those that die. The pots in which these plants are grown should be well drained, by having three or four pieces of broken pots, or potsherds, as they are called, at the bottom; and the soil in which they are grown should be composed of equal parts of loam, sand, and rotten manure. They are propagated by seeds and cuttings: the seedlings, however, rarely flower till the second year; and the cuttings should be planted in sand, and the pots plunged in a hotbed.

VISITS TO THE NURSERIES.

Henderson's, Pine-Apple Place, Dec. 26.—The principal plants which give cheerfulness to the greenhouse at this season are the heaths, of which there are many very beautiful specimens. One of the rarest and most beautiful is *Erìca Archèria;* but there are many others well deserving a place in every collection. Of these, we may mention *E. ventricòsa* and *E. v. supérba*, *E. Lambertiàna*, *E. Bowei*, and *E. autumnalis*. The different varieties of the Chinese Primrose have also a very pretty effect, particularly those with fringed petals. Several small specimens of hardy plants in pots, which have been hastened in their flowering by being kept under glass, make a very agreeable variety, and among these are the *Pỳrus* (*Cydònia*) *japónica*, the common Laurestinus, and some of the kinds of Cytisus. Others have been forced—that is, kept in a hotbed frame, or stove, and among these are the common variegated and double white Camellias, and *Rhodòra canadénsis*. Other greenhouse plants beautifully in flower are, *Chirónia linearis*, *Siphocámpylos bicòlor*, and *spicàta*, *Epacris variegata*, *nivalis*, and *rubra*, *Corræa speciosa*, *Helichrỳsum proliferum*, *Struthióla stricta*, and *Lechonaultia formosa*, a plant that, when treated like a heath, is in flower nearly all the year. In the stove is a splendid specimen of *Luculia gratíssima*, with eight large heads of pink, hydrangea-like flowers, which are delightfully fragrant; two large specimens of *Poinsèttia pulcherrima* and its variety *P. p. lutea;* and a noble plant of *Euphorbia Jacquinæflora*. There is also a specimen of *Lantana crocea*, which is new.

FLORAL CALENDAR.

JANUARY.

THE principal operations in the flower garden for January consist in protecting from frost; and nothing should be done that can in any way stimulate growth, except where plants are to be forced or brought forward in hotbeds. In the open garden, the winter is the season for rest; and this rest should be as complete as possible, that the plants may awake with greater vigour in spring. Hybrids between the splendid Nepaul tree Rhododendron and the common kinds, should be protected by wicker-work coverings like that shown at *c* in fig. 16. The evergreen Magnolias, the Australian Acacias, and similar half-hardy trees, and the more delicate kinds of pines and firs, may be protected in the same manner; while the smaller half-hardy shrubs, such as the cistuses and helianthemums, may be protected by the smaller coverings shown at *d* and *e*; and plants against a conservative wall, such as China roses for early flowering, may be protected by the coverings shown at *a* and *b*. These coverings may be made of platted rushes, sewed together; and making them will afford excellent employment for poor women and children in autumn.

Fig. 16.

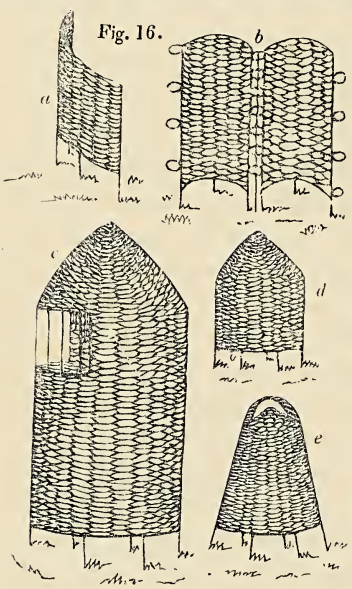


Fig. 17.

Hotbeds in frames may now be made for forcing plants in pots; such as roses, pinks, hyacinths, mignionette, and the polyanthus Narcissus; and dahlia roots, intended for early flowering, may be planted in them to bring forward the buds; or, as the gardeners term it, "to start the eyes." A very ingenious thermometer for ascertaining the heat of a hotbed has been contrived (see fig. 17), by which the heat, at the depth to which the point may be plunged, can be seen without removing the thermometer.

Ranunculus roots, which are wanted to flower in April, may now be planted in frames; and the auricula beds may be covered with a coating of manure.

1. 2. *Anemone cernua.*—*The gold haired Anemone.*
3. 4. *Anemone Japonica.*—*The Japan Anemone.*

Dan.l Hughe Lith.r to the Queen

THE

LADIES' MAGAZINE OF GARDENING.

ANEMONE, *Bauh.* THE ANEMONE, OR WIND-FLOWER.

Nat. Ord. Ranunculaceæ. *Lin. Syst.* Polyandria Polygynia.

Generic Character.—Involucre of three cut leaflets, distant from the flower. Calyx of five to ten petal-like sepals. Petals wanting.—(*G. Don.*)

1.—ANEMONE CERNUA, *Thunb.* THE DROOPING, OR GOLDEN-HAIRED ANEMONE.

Synonymes.—Pulsatilla cernua, *Spreng.*; Sjaguma Saiko, *Jap.*; Hak-too-woo, *Chinese.*

Engravings.—Fl. Jap. t. 4; and our *fig.* 1, in Plate 2.

Specific Character.—The whole plant covered with long, silky hairs. Leaves pinnately cut, lower segments on long stalks; all the segments pinnatifid; lobes cut, linear-oblong. Involucre multifid. Flowers drooping; sepals six, erect, but spreading at the tip, elliptical-oblong, acute.

Description, &c.—This beautiful Anemone is a perennial, well adapted for planting on rockwork, as in its native country it grows in hot, dry situations exposed to the sun. It is quite hardy as far as regards cold, as it is found on mountains two thousand feet above the level of the sea, but it is easily killed by damp. It is from this peculiarity that the plant is now very rarely found in British gardens, though it was introduced so long since as 1806, and though it is common in France. In Japan, Dr. Siebold tells us, it is a favourite garden plant; as the Japanese use it for decorating the rocks, which they, like the Chinese, are fond of introducing in every kind of garden scenery. The flowers appear in spring, in great abundance, and they, as well as the leaves, are very handsome. The culture of this plant is very easy; it only requires to be planted in a dry sandy soil, in a situation fully exposed to the sun. Light and air are essential to it, and also a dry soil. It is propagated by seeds, which it ripens freely; and also by division of the root, if care be taken to keep the wounded part from rotting, which it will do if exposed to much moisture.

2.—ANEMONE JAPONICA, *Sieb.* THE JAPAN ANEMONE.

Synonymes. — Atragene Japonica, *Thunb.*; Clematis? polypetala, *Dec.*; Kifune-gik', *Japanese*; Siu-jak'jak', *Chinese.*

Engravings.—Fl. Jap. t. 5; and our *fig.* 2, in Plate 2.

Specific Character.—Leaves tri-pinnate; segments cordate, three-lobed, unequal, doubly serrated. Peduncles 1-flowered, elongated and naked, or dichotomously branched. Sepals more than twenty, clothed with a thick down on the outside.

Description, &c.—This species in its habits forms as strong a contrast as possible with *A. cernua*; as in Japan it is always found, in moist woods and on the margins of rivers, while the previous species requires a dry soil exposed to the sun. In Japan it is most common at the base of Mount Kifune, near the city of Miako, whence the plant has received its Japanese name of Kifune-gik', which signifies the "star of Kifune." It is very common in Chinese gardens and shrubberies, where it is planted under the shade of trees, and where it produces its splendid deep rose-coloured flowers in autumn. It appears quite hardy, as it grows freely in the mountainous districts in the central part of Japan, where the climate is decidedly cold; and it thrives best in a moist loamy or clayey soil. It is generally propagated by suckers (which it throws up freely), as it seldom ripens its seeds; and it requires no particular care in its management. This species has not yet been introduced into England; but I have been enabled to figure and describe it from Dr. Siebold's costly work, through the kindness of Mr. Lambert, so well known both by botanists and amateurs, for his zeal in promoting science, and for his liberality in permitting authors to consult his unique herbarium, and the many rare works contained in his noble library.

ON ROCKWORK.

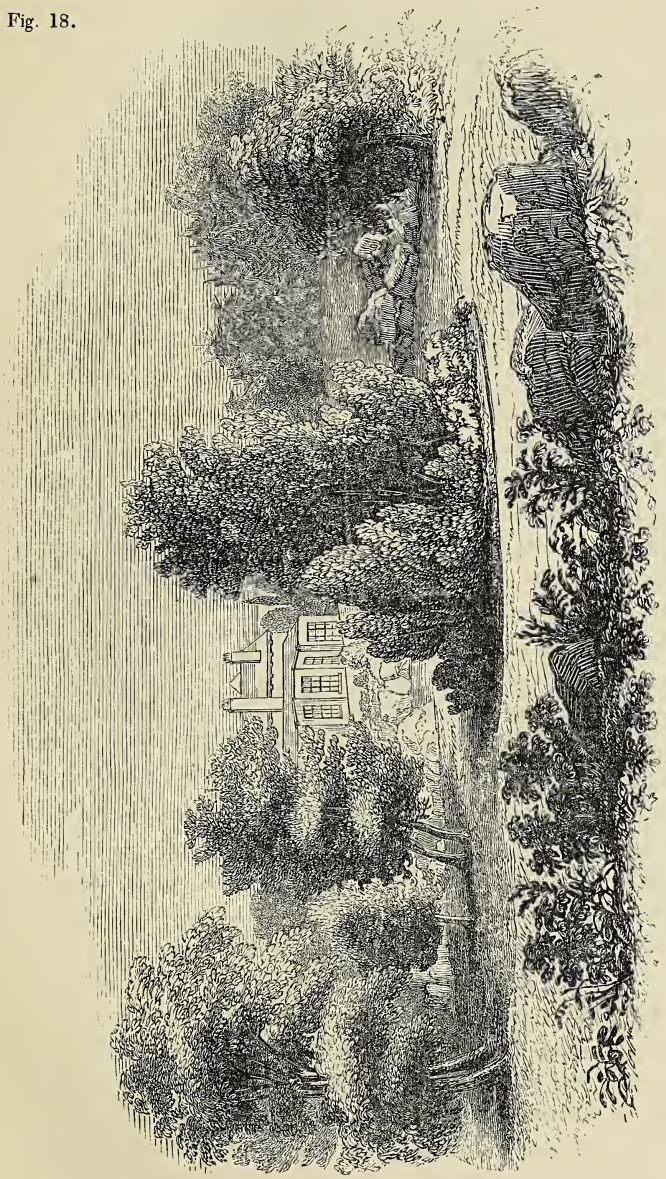
BY THE EDITOR.

(*Continued from p.* 10.)

Mr. Wells's rockwork at Redleaf is one of the finest specimens in the kingdom of what may be called natural rockwork. Redleaf is near Penshurst, and within a short distance of Tunbridge Wells. The country in this neighbourhood is finely undulated, and is remarkable for the frequent cropping out of the rocky strata, as must have been observed by every one who has visited Tunbridge Wells. This peculiarity, Mr. Wells has taken for what Mr. Loudon calls the keynote of his design; and in the rockwork at Redleaf, the original character of the scenery has

been preserved throughout, and the hand of art has only been employed to heighten the beauties of nature.

Fig. 18.



MR. WELLS' HOUSE AT REDLEAF.

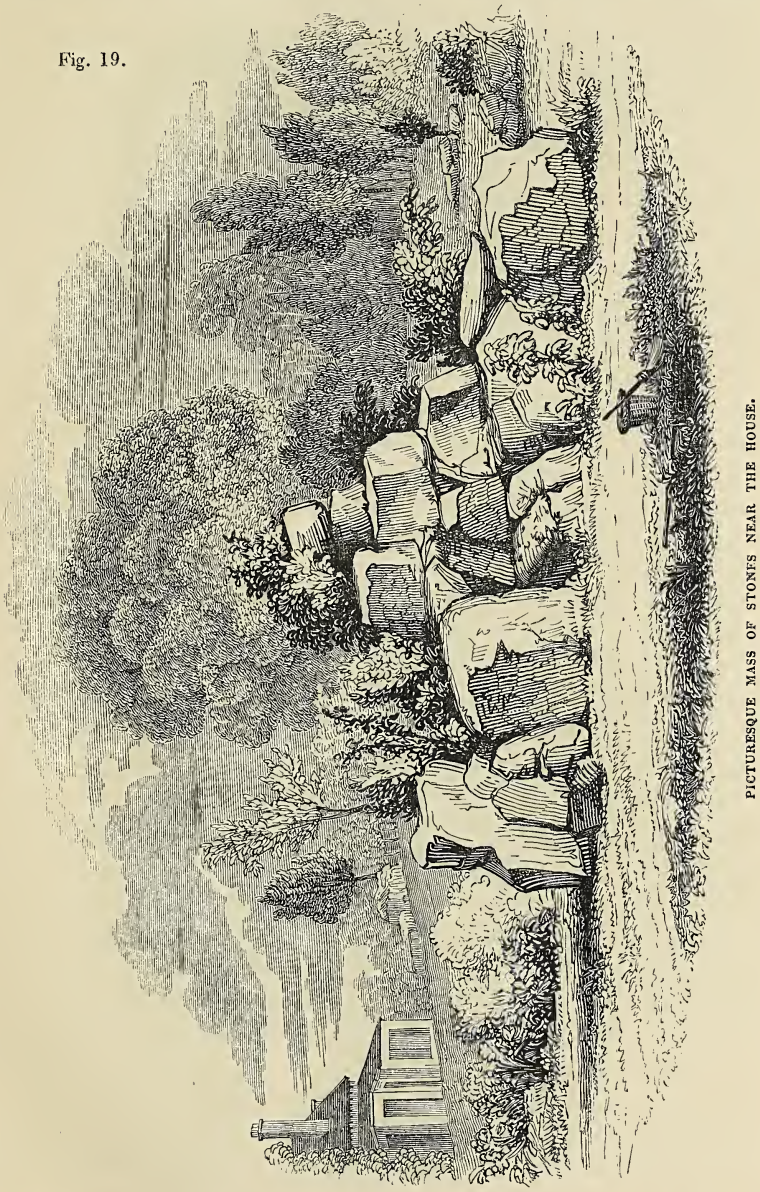
Mr. Wells's house (*fig.* 18) is placed on a steep undulating bank, facing the south-east, with a deep, broad valley at one end, lying in the

direction of north and south, with the river Eden, which afterwards becomes the Medway, running through the bottom. The varied undulations of the ground at Redleaf, and the beauty of the aged thorns and oaks, which lie scattered about in a most picturesque manner, and which are the remains of a natural wood, give a wild and romantic character to the scene admirably adapted to the introduction of groups of rocks. These rocks are not disposed according to any fixed plan, like those of Lady Broughton, but they are all intended to appear to rise out of the ground naturally. To produce this effect, a preparation is made by sinking a few stones in the ground, so as only just to appear above the surface; next a few stones appear only half rising above the ground; and these are succeeded by other stones lying on the surface, but thrown together so as to form a picturesque mass, as shown in *fig.* 19.

Near the house is an excavation eight or ten feet deep, forming a rocky precipice on the side next the house, as shown in *fig.* 20. This is in fact the remains of a stone quarry, from which the stones were taken which are used in the other parts of the grounds. At the base of this precipice is a kind of garden called the rocky hollow, in which the rocks are so arranged as to form beds for flowers, the earth constituting the bed being placed in the hollows formed between the stones. The effect produced by this rock-garden is very singular, as it is completely hidden from the house though close to it. The stranger, indeed, who sees Redleaf for the first time, will probably be surprised at there being no appearance of a flower-garden near the house; but advancing by a rocky path, which is always dry, and of which a slight indication may be seen on the left of *fig.* 20, he will find himself unexpectedly amidst a select collection of beautiful flowers. The plants in the rocky beds are mostly half-hardy, and consist of Fuchsias, Myrtles, and other greenhouse or frame ornamental shrubs, intermingled with some of the more showy climbers, such as *Maurandya Barclayana*, *Lophospermum erubescens*, *Rhodochiton volubile*, &c. The other plants in the rocky beds consist of the Californian and other showy annuals, Calceolarias, Petunias, Lobelias, and a great number of Pelargoniums. Near the masses of rocks are Magnolias, Rhododendrons, and Azaleas, several of the latter being planted in the fissures of the rocky precipice. There are also fine specimens of several kinds of Berberis and Mahonia, and of *Garrya elliptica*. Some of the beds contain only specimens of the dwarf small-leaved Cotoneasters, such as *Cotoneaster uva-ursi* and *rotundifolia;* and one bed is entirely covered with a magnificent specimen of *Juniperus Sabina repens*, which forms a thick elastic mass, like heath. When Douglas, the botanical collector, visited Redleaf, he was so delighted at the sight of this Juniper, that

he uttered an exclamation of delight, and throwing himself upon it, declared that he had slept many a night in just such a bed. This poor

Fig. 19.

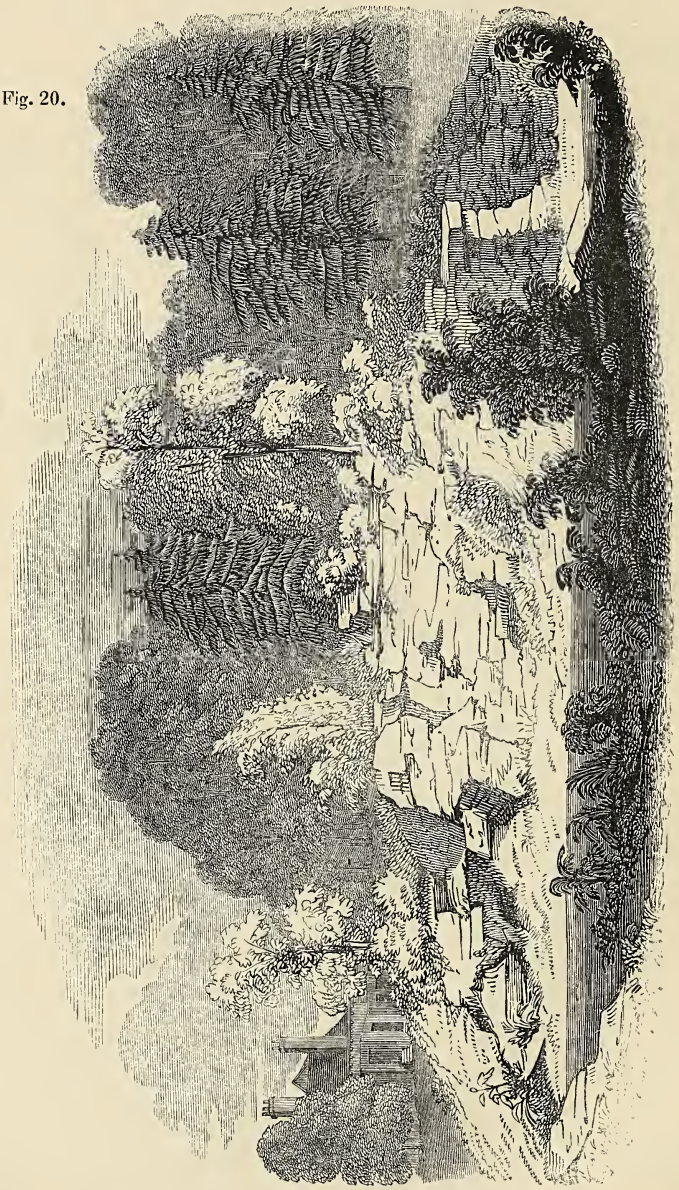


PICTURESQUE MASS OF STONES NEAR THE HOUSE.

man, to whom British gardens owe so much, as he introduced so many beautiful plants, perished miserably three or four years since, in one of

the Sandwich islands, by falling into a pit, in which a wild bull had been previously caught.

Fig. 20.



OLD STONE QUARRY.

But to return to Redleaf. In the rocky hollow are some remarkably fine specimens of Pines and Firs of the rarest and most valuable kinds.

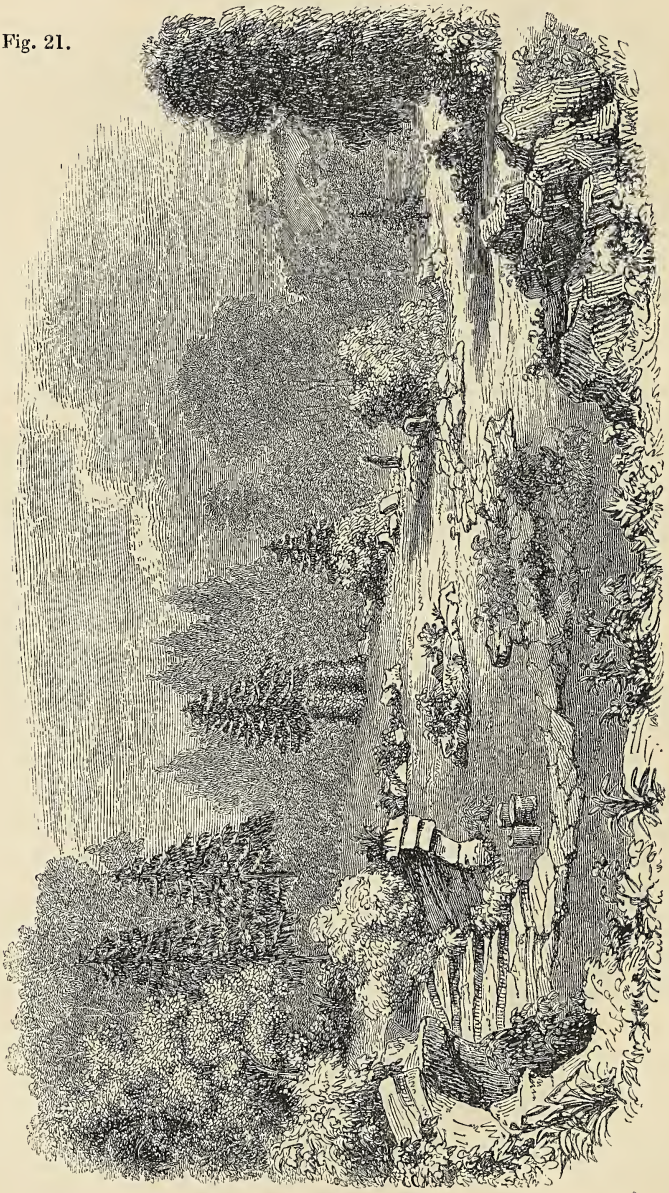
Among these are some remarkably fine plants of *Abies Douglasi* and *Picea Webbiana;* and there was the largest Chinese Pine, *Pinus sinensis*, in England, till it was killed by the dreadful winter of 1837-8. This beautiful tree was sixteen feet high, and had produced cones, though it was only raised from seeds imported by Mr. Wells from China in 1829. A specimen of *Araucaria imbricata*, which stood near the Chinese Pine, and was exposed to the same degree of cold, was uninjured, and is now a remarkably fine tree. There are also some fine young cedars, which are interesting from having been all raised from seed by Mr. Wells, and from one of them having attained the height of fifty-two feet, with a trunk nearly six feet in circumference, in twenty-seven years. *Fig.* 21 shows the general appearance of the rocky hollow, with the descent into it from the lawn by a flight of steps rudely cut in the shelving rock.

The rocky path, after leaving the hollow, conducts the stranger through the lawn, which is beautifully diversified with trees and rocks (see *fig.* 22), to the English flower-garden. This garden is also situated in a hollow, and it is laid out in what is called the English style on the Continent. This style, which is an imitation of nature polished and refined by art, is well adapted to the general character of the scenery at Redleaf, and is strikingly opposed to the formal or geometric style adopted in the early ages of gardening. When gardens were first formed, the object was to render them as unlike nature as possible; and thus was introduced the geometric style, and the topiary art (that of cutting trees into the forms of animals, &c.), which we find was practised in Pliny's garden, one of the few of those of the ancients, accounts of which have been handed down to us. In the English garden of Mr. Wells (see *fig.* 23), there are numerous groups of trees upon the lawn, interspersed with a few China vases, some for flower-pots, and some to serve as seats. In this garden, on a rocky ledge, stands a rustic summer-house, curiously and elegantly built of several different kinds of wood, but chiefly of oak and hazel rods. The floor is laid with oak chumps placed upright; and the furniture consists of a table beautifully inlaid with various native woods, and of some chairs and a kind of sofa, made of hazel rods with the bark on, and varnished.

Beyond the English garden is an aquarium, or pond for choice water-plants, in front of a bank of rockwork (see *fig.* 24); and farther still, at the boundary of the lawn, is the natural rocky ledge, which has given the tone to the whole scene. Throughout the whole place, though the most consummate art has been displayed everywhere, art is never visible; and the whole, by a very small exercise of the imagination, might be

supposed the work of nature, with the exception of the stone walk across the lawn, which certainly disfigures the place. This stone walk is com-

Fig. 21.

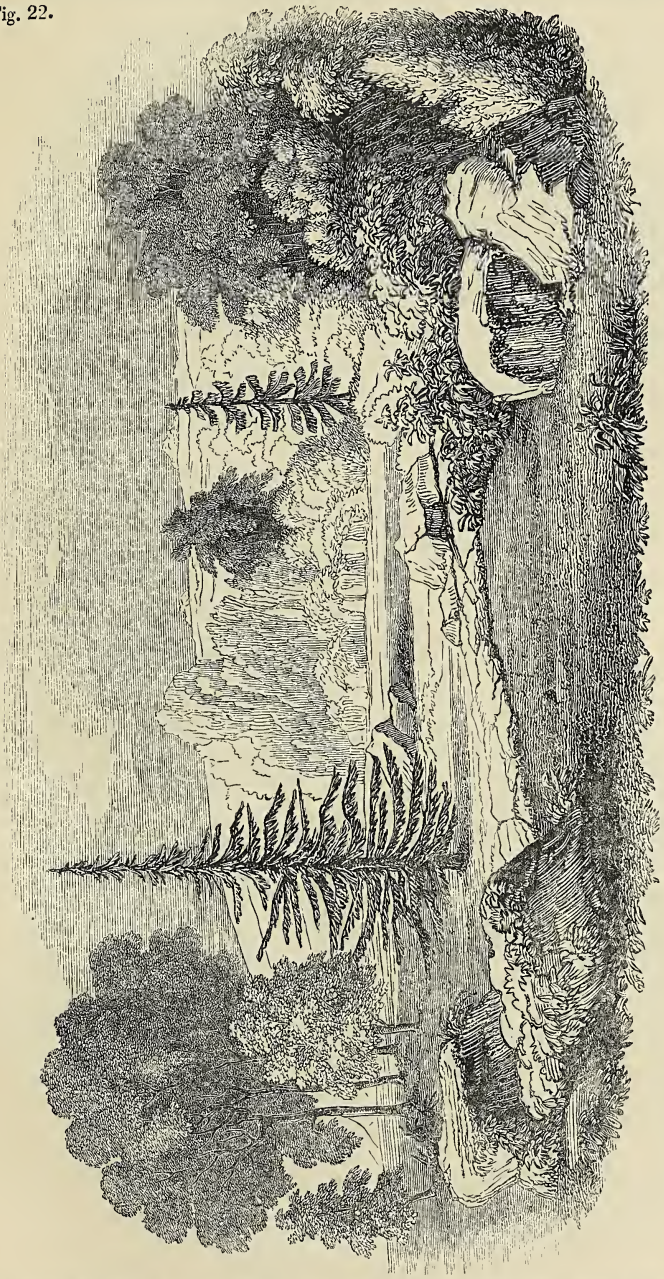


THE ROCKY HOLLOW.

posed of flat pieces of stone from six inches to a foot in thickness, not even on the surface, and joined together in the most irregular forms, like

the lava pavements of Portici and other towns of Italy. Notwithstanding

Fig. 22.



THE ROCKY LAWN.

this irregularity, it is impossible, even for a moment, to fancy this rocky

path natural; and as the walk is four or five feet wide, and the stones of

Fig. 23.

ENGLISH GARDEN AT REDLEAF.

which it is composed are from three to nine inches above the surface, it is

a great deal too conspicuous, and from some points of view it has the effect of dividing the lawn into two distinct parts. To take off the harsh-

Fig. 24.

AQUARIUM AT REDLEAF.

ness of this line, Mr. Wells has introduced some exceedingly ugly seats, in the shape of gigantic toadstools, which are certainly a much greater

deformity than that which they are intended to conceal. Perhaps, a better method of softening the effect of the stone walk would have been to sink it an inch or two below the surface of the lawn, when it would have been nearly hidden by the grass. In every other respect, Redleaf is nearly perfect; but, like Lady Broughton's, it is not shown to the public.

ON THE MANAGEMENT OF PLANTS IN ROOMS.

BY MRS. GLOVER.

It is a general complaint that plants in rooms have generally a sickly, unhealthy appearance, particularly during winter; which is attributed, and I believe with justice, to the dryness of the air (see Lindley's Theory of Horticulture, p. 151). However, it is very possible to keep plants in rooms, even during winter, in perfect health, as I have experienced myself. Some years ago, I had the misfortune to break my ankle, and, owing to some mismanagement in the setting, I have been so lame ever since, that walking is painful to me. As before this period I used to be very fond of gardening, I at first felt my affliction severely; but I now find as much pleasure in watching my plants in pots, as I ever did formerly from cultivating those in the open garden.

As my cottage is very small, I am obliged to keep the greater part of my plants in the room I live in; and, consequently, as my health renders it necessary to keep my rooms very warm, the plants have more heat than they require, and a very dry air. The first difficulty, that of the plants having too much heat, I have tried to overcome by keeping them in a deep bay window as far from the fire as possible, and frequently placing a screen between them and the rest of the room; and to prevent any ill effects arising to them from the dryness of the air, I water them twice a day, never suffering the water, however, to stand in the saucers. Still my plants did not thrive, till at last the idea occurred to me that their sickly appearance was owing to the pores of their leaves being choked up with the dust of the room, and I determined to try the effect of washing the leaves every day. The result has been quite satisfactory; and I find my plants thrive, though now I do not wash their leaves oftener than once or twice a week. To perform the operation as easily as possible, I have had a tin pan made with a division in it to hold the water, while the pot containing the plant is placed in the other part. I then have the tin pan placed on a low table, near the sofa on which I sit, and I wash the leaves thoroughly with a sponge. I use plenty of water, which falls down and

waters the earth in the pot; and as soon as I have done, I place the pot in a dry saucer and have it removed to its proper place, while I wash another plant. In this manner, I keep my plants in perfect health; and I have Camellias now beautifully in flower, that have been kept in my living-room for several years. Every one who has ever kept Camellias in a room, will allow that this is a tolerable proof of the efficacy of my treatment; as the flower-buds of Camellias very frequently turn brown and fall off if the plants have not plenty of air and water; and they are very apt to be attacked by the red spider, and also by a very disagreeable kind of black fly, which fixes itself in the hollow of the underside of the leaf, and which it is very difficult to dislodge.

Pearsall Cottage, near Wolverhampton,
January 16, 1841.

ON THE MANAGEMENT OF FOREIGN SEEDS.

BY MR. BEATON.

It is a common, but very erroneous opinion, that seeds from different countries require different treatment to make them vegetate, or, as the gardeners express it, make them come up. On the contrary, the seeds of all hot countries, whether from Calcutta, Ceylon, or the Cape of Good Hope, from Mexico or Brazil, or from Australia or New Zealand, should be treated exactly alike; and they all succeed best sown in pots, and placed in a common cucumber frame till they appear above ground. Even Cape Heaths, which are sooner injured by artificial heat than any other plants, are raised in heat by the best and most skilful propagators. As to the seeds of plants which are known to be quite hardy, of course it would be folly to take up any room in a hotbed with them, as they will do quite as well, or better, in the open border.

The best way to treat foreign seeds, is to divide them into classes, according to their size instead of their country; as the largest seeds vegetate much slower than the small ones, and consequently are not so soon ready to transplant; they also require different management with regard to soil, watering, &c. Thus, if there be many seeds, they may be divided into three classes: the largest being marked No. 1, the medium size No. 2, and the smallest No. 3. The seed-pots should be new, or at least washed quite clean and dried. This is a very necessary precaution, though one seldom attended to by amateurs. In fact, no flower-pot should be used either for sowing seeds, or for transplanting, that is not perfectly clean and dry; as if any of the old earth is left adhering to the sides or

bottom of the pot, or if the pot be moist, the new earth put in will not turn out in a solid mass when the plants are to be shifted, but the ball will be broken, and the tender roots of the young plants torn and seriously injured. The seed-pots should be 48's (that is, pots made 48 to the cast, which are 3 inches in diameter and 4 inches deep), as if large pots are used, however well they may be drained, they will hold too much moisture for delicate seeds, or indeed for any imported seeds, as they are very seldom in a vigorous state. More seeds are lost by being sown in large pots than most persons are aware of.

The best soil for the seeds to be sown in, is a fresh sandy loam, with a little peat earth mixed with it; but if this soil cannot be readily procured, any kind of loam or clay not too stiff may be used, mixed with sand. The clay should be broken rather small, and mixed with a good deal of sand, according to its quality; a poor, stiff clay requiring much more sand than a light free loam. The mixed sand and clay should then be passed through a coarse sieve, and the hard stony particles which will not pass through the sieve may be kept to put over the crocks used for drainage on other occasions. Several pieces of broken pots, or, as the gardeners call them, crocks, are then to be put into the bottom of each pot, (or some rough cinders, which are better), for drainage; taking care that the drainage is at least an inch deep. The pots for the seeds marked Nos. 1 and 2 are to be filled with the compost (that is, the prepared soil) to within half an inch of the top, and the pots for No. 3 half full. A still finer compost must now be made by taking two-thirds of the prepared soil, and adding one-third of silver sand to it, after which the mixed soil must be passed through a very fine sieve, and part of it being used to fill up the pots for the smaller seeds, the rest must be kept for covering the larger ones.

The next operation is the sowing; and this is performed with the larger seeds (No. 1), by strewing them over the surface of the earth, and then covering them with the finer soil, about the thickness of a sixpence. The medium seeds, No. 2, must be treated in the same manner, but not covered so deeply; but the pots for the small seeds, No. 3, should be watered before the seeds are sown, and the seeds should be scattered over the wet soil, and pressed gently into it, but not covered. The pots must then be removed to the hotbed or cucumber frame, still keeping the different classes by themselves, and placing No. 3 in the front of the frame where it will get least light. In hot sunny weather, a mat should be thrown over the glass to prevent the sun from drying the earth in the pots, as it is desirable to give the seeds very little water, and yet to keep the soil in a moist state. The larger seeds may be watered occasionally;

but if water be poured carelessly on the earth containing the smaller seeds, they will be displaced, and will never vegetate. The small seeds, if good, will generally begin to appear above ground a few days after they are sown, and the whole will be "up" within a month; while the large seeds will be frequently six months or more before they show any symptoms of vitality. When the large seeds have been sown a long time without vegetating, and the surface of the mould looks hard and crusty, or is covered with moss, the surface of the soil may be safely removed, as the depth at which the seeds were sown is known. Removing this covering will lay bare the seeds, and thus it will be easy to ascertain what state they are in; and after removing those that have become rotten, &c., the rest may be covered with fresh soil. Now this could not have been done if the seeds had been sown promiscuously, as the covering to the large seeds could not have been removed without injuring the smaller seeds, which were less deeply sown.

From the middle of March to the end of that month, is the best time for sowing foreign seeds; but they may be sown till the middle or end of July, though not later, to avoid the difficulties attendant on the rearing a large young family of plants in winter—a charge that weighs heavily, even upon the best and most experienced gardeners.

No air need be given to the frame till the young plants begin to appear; as the closer the frame is kept, the less water will be required, and the sooner the plants will vegetate. As, however, air is useful to the young plants, it is best, if practicable, to remove those pots in which "the seeds are up," to another frame to which air can be freely admitted. As the seedlings increase in growth, more air should be admitted; and if any of them look yellowish or drawn up, it is a proof that the bed is too hot for them, and that they should either have more air or be removed to a cooler place. When the plants have expanded their second pair of leaves, they are generally ready for transplanting. To understand this, it must be observed that the seed-leaves or cotyledons of all plants are different from their true leaves, and that it is not till the true leaves appear that the plant will bear transplanting. When the seedlings are transplanted, they should be put into very small pots; and if the young plants are very small, from three to six may be put in each pot. They will require a little water as soon as they are potted, and to be shaded from the sun till they begin to grow. When the first pots are filled with roots, which may be seen by turning the ball out on the hand, the plants should be shifted into pots a little larger, shifting again as often as necessary. The soil should be a light compost of equal parts of peat and loam, mixed with one-half of sand for the first two shiftings, and afterwards less sand and loam. The plants

may be shifted as often as the roots fill the pot, during summer; but they should not be disturbed after the middle of September, in order that the roots may be well established before winter.

All this may be done by a lady without any assistance, after the hot-beds have been made, save that of a man to raise the lights of the frames when necessary; and a lady will find the watchful care required by the young plants afford her constant occupation. There is always also great interest excited in trying to identify the seedlings, and in seeing what they will prove to be.

Should any of my readers wish farther information, a query through the medium of this Magazine shall be answered as soon as possible.

Shrubland Park,
January 1*st*, 1841.

ON THE BEST METHOD OF GROWING THE PHLOX DRUMMONDI.

BY A LOVER OF GARDENING.

Madam,—I am delighted to hear you are about commencing a Ladies' Magazine of Gardening. It really is a most happy thought of yours, for hitherto there has been no periodical exclusively for lady-gardeners, and who are, I think you will find, a very numerous class. I have no doubt you will soon have many ladies respond to your call; more particularly from your being known as the author of that most beautiful work, "The Ladies' Flower-Garden," which every lady who is a lover of flowers should possess.

If acceptable, I shall occasionally forward you a communication on my treatment of plants for beds or borders.

I shall begin with a great favourite of mine, the *Phlox Drummondi*, of which there are numerous varieties. Those which I prefer are the very dark ones. The best plan is to procure seed from a plant which you have seen in flower, so that you may know if you are likely to have a variety worth growing.

I generally sow the seed the beginning of February, in a pot about five inches in diameter, nearly filled with soil in which cucumbers had been grown the preceding year. Each seed I plant half an inch apart, and then press lightly into the soil. This is best done with a piece of wood cut round, about two inches in diameter and half an inch thick, with a small piece of wood about three inches long fixed on one side in the centre for a handle. This will be found to be very useful in sowing all sorts of seeds in pots. I then cover the seeds with some of the same

soil sifted fine, to the depth of nearly a quarter of an inch; and after giving the soil a slight sprinkling with water, I place the pot in a warm part of a small greenhouse. I cover the top of the pot with a piece of wood or slate, to prevent evaporation as much as possible. As soon as the seeds begin to grow, I remove whatever I may have placed over the pot. When the plants are an inch high, I pot them singly into very small pots, using some of the same sort of soil, and replace them in the greenhouse, or in a pit from which the frost can be excluded. If they require it, I pot them again before I turn them out, which I generally do in the middle of May.

I find if the beds or borders in which they are planted are richly manured, they will not flower or seed so freely as when planted in the common soil of the garden, with which is mixed a portion of very rotten leaf-mould.

I have had this very beautiful plant in perfection in December, when the *Fuchsia globosa* growing in the same bed was killed to the ground by the severity of the frost. How long it might have remained uninjured I cannot tell, as I destroyed it to make room for some Crocuses.

In my next, I shall treat of some other favourite plant.

TOTTENHAM,
December 24, 1840.

THE HISTORY OF THE CAMELLIA.

BY THE EDITOR.

THE Camellia was first known in Europe, from the accounts of the early travellers to China and Japan, who related that they had seen in these countries enormous rose-trees, as large as oaks, but with dark green shining leaves. These stories were at first fancied fabulous, till the Jesuit Kamel, who visited Japan as a missionary in 1739, contrived to obtain two plants of the single red, which he brought to Europe, and sold for a large sum to Lord Petre, then a warm patron of gardening in England. They were taken to Thornden Hall (Lord Petre's seat in Essex), and there being kept in a stove, they were absolutely killed by too much kindness. At that time the gardener at Thornden was a Mr. James Gordon, who soon after Lord Petre's death in 1742 established a nursery at Mile End; and, being aware of the value of the Camellia as an ornamental plant, he contrived to procure another specimen, which he planted in the free ground of a conservatory, and where I believe it remained till the nursery was broken up and the ground let for building, in 1837. This curious plant when I saw it in 1832 had a rugged bark, and

presented all the marks of old age; but it was a stunted deformed bush, from having been used for many years as a stool for raising young plants from. Mr. Gordon also procured plants of the variegated double red, and the double white, all of which were in existence, but in the same condition in 1832. The date generally assigned to the introduction of these plants is 1792; but this is evidently a mistake, as there is not only evidence to show that they were in the possession of Mr. Gordon, who died in 1780, but they are included in Archibald's Plant Catalogue, published in 1791, without any mark of their being new. For many years after its introduction, the Camellia appears to have been sold at a very high price, as in the first volume of the Botanical Magazine, published in 1787, where the single red was first figured (t. 42), it is observed that it may probably prove as hardy as the Magnolia or Laurustinus, but that "the high price at which it has hitherto been sold may have prevented its being hazarded in this way."

Several other varieties of Camellia have been imported from China, and above a thousand others have been originated in Europe. Besides these, there are numerous other species now common in gardens. The handsomest is *C. reticulata*, a most splendid plant, with flowers as large as those of a Peony; it is of very vigorous growth, and appears to be more hardy than the common species. *C. maliflora* is a beautiful plant with small double flowers, like those of the Apple; and *C. Sasanqua* has small single white flowers. There are several other species, but these are the most common.

Botanically, the Camellia is most nearly allied to the common Tea (*Thea Bohea*). The only differences are that the stamens in the Camellias grow together at the base, while in the Tea they are distinct, and that the capsules are somewhat different. The flowers of the Tea are white and small, resembling those of *C. Sasanqua*, and the leaves are thinner. Linnæus named the plant in honour of the Jesuit Kamel, who first brought it to England, and whose name when Latinized becomes Camellius.

The culture of the Camellia is not difficult: the principal things to be attended to are growing it in light soil, giving it plenty of water and air, and shading it from the sun. It is very nearly hardy; and when planted in the open air, it only requires to have its roots protected by straw laid on the ground round the trunks for two or three years, till the plants have become established. Some plants in the Mile End Nursery were above twelve feet high; and others at Chandler's against a wall have stood out since 1827. At Bicton, near Exeter, there is a bush above ten feet high, which has stood out nearly twenty years; and in the

Goldsworth Nursery, near Woking, (Mr. Donald's,) there are thirty or forty kinds which have stood in the open air many years without protection. It does not appear, however, that the Camellia will bear the open air far north of London, or that it has ever attained a greater height in England than twelve feet; but in Italy, near Naples, a plant grew to the height of twenty feet in seven years; and in ten years it was upwards of thirty feet.

When Camellias are grown in pots, care should be taken to give them plenty of drainage, both of crocks and cinders. The soil should be peat, or very sandy loam mixed with vegetable mould; and they should be watered every day, freely, but without ever allowing the water to stand in the saucer. The leaves should be frequently syringed, but never when the sun is shining upon them, as it would make them become blotched, and indeed they should never, if possible, be exposed to the direct rays of the sun. On this account an east or west wall suits them better than one full south; and they will grow well in a vinery, where the shade of the vine-leaves would be injurious to most other plants.

The number of Camellias raised every year both in England and on the Continent almost exceeds belief; and in America they are so highly prized as ornaments for the hair, &c., that a dollar is the common price for a single flower.

ON THE BIRDS COMMON IN GARDENS.

BY MR. MAIN.

Many persons who possess gardens feel a desire to know something of the birds usually found in them, and particularly as to which are injurious to the trees. Several of our most beautiful birds are unjustly accused on this score, and it may, therefore, be interesting to the readers of the Ladies' Magazine of Gardening to know something about them.

Among the birds which feed on insects, and therefore do good instead of harm to gardens, are those belonging to the genus Parus (the Titmouse). These are pretty little birds, six species of which are natives of this country. They all live on the larva of insects, or on worms, and are not averse to any kind of carrion that falls in their way; consequently, they are frequenters of butchers' shambles and slaughter-houses, and even in public markets some of them may be seen feasting on the largest joints.

P. major, the Greater Titmouse.—This species lives mostly in woods, and nestles and roosts in holes of trees. Sometimes they nestle in holes of walls or buildings, ruins, and deserted cottages. They make their nest

of withered grass, wool, feathers, and hair; lay seven or eight white sparingly spotted eggs, and sit about a fortnight. They are not song-birds, but have several lively calls. In winter, when hard pressed for food, they sometimes destroy many hive-bees. This I have often watched them at till, to save the bees, I have been obliged to shoot the aggressor. He seats himself at the door of the hive, and taps with his bill to provoke the bees to come forth. The first bee that ventures out is instantly seized by the middle and carried off to a tree, and there beaten against the branch till it is nearly dead. The bird then separates the head and thorax, which it swallows, from the abdomen, which it rejects, as containing the sting. The bird immediately hies back again for another victim. My attention was first drawn to this circumstance by observing a great number of the abdomens of bees lying on the snow under a cherry-tree in front of an apiary in an orchard; and which made me watch for, and kill the depredators. It is only some individuals of this species which have the knack of killing bees in this manner, and these should be watched for and shot; for otherwise valuable stocks of bees may be seriously reduced by them. The colours of this bird are—head and throat black; back green; beneath yellow-green, with a black line in the middle; quills tipped with blue and white; length six inches.

P. cæruleus, Blue Titmouse.—This is one of the smallest and most familiar of the family, always inclined to be near the dwellings of man, as well for protection against birds of prey as for obtaining a hole in a wall to nestle in. It lives chiefly on small insects; and, as many of these hide on the lower sides of branches, the bird is obliged to hang itself from the branch with its back downwards, in order to see its prey, and in this position it spends half its days. This little bird is naturally vigilant, and in consequence is very useful to other birds in sounding a note of alarm on the approach of an enemy; for as soon as a cat, strange dog, fox, or sparrow-hawk, comes in sight, then our little bird vociferates its warning in a gruff hurried note. Though so small a bird, it is very prolific, often bringing forth a brood of from ten to fourteen young ones, which after they have flown, are permitted to roost on the place where they were hatched, for some time before they finally leave their parents.

P. ater, the Cole Titmouse, is a species not quite five inches in length; bill and head black, with a white spot on the hinder part; above green-grey; beneath white, and wing-coverts tipped with white. This little bird is seldom seen near houses, but inhabits retired parts of woods, where it breeds and lives on insects, like the other species.

P. palustris, the Marsh Titmouse.—This species has also a black head, but the cheeks are white; back greenish; beneath white; and lead-

coloured legs. This bird is not of such retiring habits as the preceding, as it sometimes ventures into gardens. It has a spring note which is remarkable, it being like "the whetting of a saw," and so loud, as to be heard at a considerable distance.

P. caudatus, Long-tailed Titmouse.—This is a remarkable little bird, as having a tail out of all proportion to the size of its body. The plumage is of various colours: crown white; coverts of the wings black; tail black and white; and with a thick short bill. This species lives on the same kind of insect food as the others; frequents woods and hedges; and makes a very curious nest resembling that of the common wren, though much narrower at the top than at the bottom. It is an ellipsis within and without, with a small entrance on one side near the top. The materials are chiefly green moss and other soft substances, such as hair, cobwebs, lichen, &c. The parents and their numerous young keep together for several months after leaving the nest, and are constantly flying like darts from tree to tree in quest of food, and maintaining among themselves a low twittering conversation, as if afraid of losing each other. The last of this genus is—

P. biarmicus, the Bearded Titmouse.—This bird is in shape a good deal like the foregoing, but the tail is hardly so long; the head is grey, and there is a black tuft of feathers under each eye: the general plumage is red-yellow. This species is only found in some places; it is much more carnivorous than any of the others, and, consequently, is a constant attendant in butchers' shops when it can enter with impunity.

In estimating the general character of this tribe of birds as a portion of animated nature, they must be considered as useful to mankind, by destroying certain tribes of insects, which, without their assistance, would become so numerous as to place in jeopardy some of our necessaries of life. They, therefore, should be (especially the little blue one) encouraged about gardens. Indeed, I would go so far as to advise that in building garden-walls, openings should be left for the accommodation of the tom-tits.

I shall now say a few words on the genus *Hirundo* (the Swallow). This is a tribe of summer birds which are so familiar that they may be truly called *inmates*. They are all so well known as to need no description.

H. rustica is the common swallow; and it now deserves its specific name much more than ever, for it is far more plentiful in the country than it is in towns; the new-fashioned ornamental chimney-pots so universally used have banished the poor sociable swallows from towns, to take up their abodes in the old-fashioned chimneys of cottages and farm-houses in the country. Another architectural improvement has also tended to banish swallows from modern buildings: instead of dripping eaves, we now have parapet walls, so that the open spaces under the eaves, which used to be

asylums for the whole of the swallow tribe, are now shut up. The swallow arrives in this country about the 13th of April in ordinary years, and remains with us till the 10th of October following. As swallows live entirely on flies, and especially on those which are mostly bred in cold humid regions, they must shift to this and other northern European countries, as well for food as for chimneys to build in, neither of which they can have in central Africa, where it is supposed they live during our winter. They require a narrow shelf to form their nest on, which is composed of slender straws bound together with clay; the inside is lined with feathers, wool, and hair. The eggs, five or six in number, are white, the shell being thin, and almost transparent. They usually breed twice in the summer, if they have time. The swallow, of all birds, has the greatest antipathy to hawks, and other birds and beasts of prey, and no one is a more sharp-sighted and noisy alarmist. Soon as a hawk appears within half-a-mile of the swallow's station, he immediately sounds his shrill *chee, chee;* other alarmists among the birds join their notes of fear; the dunghill-cock gives his scream of "beware" to his attendants, who, with the other small birds, fly to cover, while the swallow, with all his tribe, mount boldly up in the air to meet the foe; follow him with loud taunts and upbraidings, and even attempt to buffet him away from the village. When the pursuit is ended, the pursuers return in a body, all joining in a song of congratulation, to resume their ordinary affairs.

Even as a song-bird, the swallow is not to be despised; his regular air which he gives with so much glee while sitting on the chimney-top early in the morning, has agreeable variations, and some very sweet tones ending with a very pleasant trill. In general, it is a talkative, cheerful bird, except in very wet weather, when it is compelled to work hard for food, skimming over the damp meadows and pools to capture the very few flies which are then in motion. In fine weather, when flies are plentiful at all times of the day, the swallows can afford to take a good deal of recreation; and this they do towards sunset, when the whole fraternity assemble high in the air and perform various graceful evolutions, as if they felt a pride in exercising their powers of wing. These assemblies are very frequent after all the broods are flown, and when the time approaches for their leaving us for the summer.

H. urbica.—The Martinet or Martin is a constant companion of the swallow, arriving about a week after and remaining about a week later, say from the twentieth of April till the twentieth of October. The martin is much more a town bird than the swallow, as its nest is generally built in the upper corners of windows, or any similar situation. The exterior of the nest is hemispheric, and it is composed of slender straws and clay

well kneaded together, which when dry is perfectly hard and firm. It is lined with feathers and other soft matters. In looking out for a corner to build in, the martin shows its judgment in fixing on one where there is space enough for the intended nest, before a particle of the foundation is laid. This is most observable when the Martin is examining the windows of a street. All those in which the frame of the window is nearly even with the face of the wall are rejected; but if the bird come to one where the frame stands half an inch or an inch back, in that, if permitted, it will will build. The wonder is how they can judge of the necessary space by the eye only, and when the difference is so trifling; but this it certainly can do, so as never to be obliged to give up a place once approved of.

The pair always roost together in the nest, and are most affectionate to each other; the male feeding the hen while sitting with as much assiduity as they both afterwards feed their young. As their nests are always inaccessible to rats, cats, and other predacious animals, and as they mostly breed twice in the summer, it is astonishing to see how the company belonging to a single village are increased before their departure in the autumn. Just before that time, indeed, they congregate in vast flocks from all quarters of the district, and may be seen disporting high in the air about sunset; soon after which they go to roost, not near their old nests or haunts, but on the branches of willows or other trees overhanging a pond or river. To those trees they drop from the assembly above, one after another, till all have descended and seated themselves close together along the slender shoots which bend with their weight till the points of the branches almost touch the water. While the weather remains fine and warm enough, the Martins stay in their breeding locality for several days; flying about and feeding during the day and roosting in the same places every night. But as the cold increases they begin to want both food and warmth; and fly towards the sun on mornings, and at mid-day they are seen taking rest, and basking in the sun on the architraves or other projections on the south sides of buildings. A few such morning flights will carry them across the English Channel, when they soon arrive in warmer latitudes. It may be observed, that, when either the Martins or the swallows are on their journey either to or from their breeding-places, they fly near the ground, and in a very hasty manner, keeping in a direct course north-westward when arriving, or south-eastward when taking leave. These migrations I have been for many years a witness of at my different residences within a circuit of forty miles round London; and I have read that they keep similar courses in very distant parts of the kingdom. Their great rendezvous before quitting this country is said to be the

south downs of Kent, Surrey, Sussex, and Hants, and whence it is likely they take their final flight for the Continent.

H. riparia, the Sand Martin.—These are the smallest of the tribe, and so called because their nests are always made in sand banks, such as are somewhat perpendicular and bound rivers, quarries, or sand-pits. They take to the tunnels formerly made by moles, and make a nest of withered grass and feathers, where they lay, hatch, and rear their young in the dark. The birds arrive with the house martin, join their assemblies, after the breeding season, and also depart with them. They are never seen, except when on their passage, in those parts of the country where there are no sand banks for them to nestle in. We have known these little birds in several situations, but never could ascertain whether they have the power of excavating holes for themselves, though we are rather inclined to think they have, from the great number of holes in the banks they frequent. They are easily distinguished from their congeners by their mouse-coloured plumage.

H. apies, the black Martin or Swift.—This is the largest of the swallow genus which visit our country. They arrive in pairs about the first of May, and stay till about the tenth of August; after which day they are seldom seen unless their first pair of eggs have been destroyed, in which case they will try to rear a second brood, and which detains them sometimes for another month.

The Swift inhabits church towers, old castles, or houses having openings under the tiles or slates of the roofs. It makes no nest, contenting itself with any depression in the brickwork or masonry that will hold its two eggs. These birds never alight on the ground, and cannot walk, their short legs and small feet only enabling them to cling to the edge of their hole and to creep inwards. Their toes all stand so forward, that they must descend before the birds can use their wings, and on this account it is that, if on the ground or other level surface, they cannot rise in the air. No bird has greater power of wing than the Swift, as they can sustain themselves during the season they are with us for seventeen or eighteen hours daily; and in their migrations, no doubt, for many more hours without taking rest. The velocity of their flight is no less astonishing than its endurance; and hence their vulgar name. This is particularly noticeable in a custom they have of associating in groups towards the close of the day, and flying round and round their habitations, each uttering their screaming note of *swee ree, swee ree*, for an hour together. There is no beauty in these sounds, but they are always an accompaniment of fine weather, and are often the only notes a citizen hears from birds in a state of liberty. As the Swifts arrive in pairs, so they depart; and on these journeys generally fly high and very leisurely.

Caprimulgus Europæus, the Goatsucker.—This is a summer bird, about ten inches in length, with darkish-coloured plumage, marbled with brown and ash colour. The bill is short and somewhat hooked, with bristles round the base. Mouth very wide, and legs feathered below the knees. These are night-flying birds, their food being moths, which only fly at night. They are seldom seen by day unless disturbed from their nest; and then show a good deal of boldness in defending it. They make their nest among fern at the bottom of low bushes, hence they are also called the Fern Owl. At twilight they may be seen flying round high trees hawking for moths, and for which their capacious mouths, set round with bristles, are so well adapted. Occasionally they utter a faint cry resembling that of the screech-owl, only not so loud; and often alarm night-walkers, not only by their cry, but by their audacity in pouncing on the crown of a man's hat who happens to pass near their nest in the dark. Many rustics have considered these blows to have been given by supernatural agents, and have reported accordingly.

That they suck the female goats is an old idea; but it (the fact) has never been authenticated, and, therefore, the name has been changed by late writers.

REVIEWS.

The Botanical Magazine for January contains figures of the following plants.

Æschyanthus grandiflorus, (t. 3843) a very showy East Indian parasite, which was first figured in Paxton. Though it grows on trees in its native country, it succeeds well and flowers in this country when planted in pots. The flowers are scarlet, and in form bear some resemblance to those of some of the kinds of Chelonè.

Tropæolum Moritzianum, (t. 3844). A very curious species of garden Nasturtium, or Indian cress, from the West Indies. It is most nearly allied to *T. peregrinum*, the canary-bird flower, but the flower is red and yellow, and the petals are curiously fringed. It flowered for the first time in Great Britain, in July, 1840, in the greenhouse of the Glasgow Botanic Garden; but at Berlin and other places it is found to grow much more vigorously in the open air.

Oncidium macrantherum, (t. 3845). A new dwarf Oncidium, with

pale brown and yellow, insignificant flowers. It flowered for the first time in England, at Woburn, in April 1840.

Malva lateritia, (t. 3846). A new Mallow, with pale, brick-coloured flowers. It is a hardy perennial from Buenos Ayres, with prostrate stems. The flowers are pretty, and their pale colour is relieved by a ring of deep rose-colour inside the cup.

Orthosiphon incurvus, (t. 3847). A new stove plant from the East Indies, with pale pink labiate flowers. It flowered for the first time in England, at Syon.

Angelonia cornigera, (t. 3848). A new species of Angelonia, found in Brazil, by Mr. Gardner, in 1839. The flowers are purple, and bear some slight resemblance to those of the Pentstemons; but they are much smaller. It is a stove annual.

These are all the plants figured in the Botanical Magazine, and five out of the six are new; or at least have never been figured in any British botanical periodical before. The handsomest is decidedly the new Tropæolum, which promises to be a showy plant for arbours and trellis-work in the open ground.

The Botanical Register contains figures of the following plants:

Echeveria lurida, (t. 1 for 1841). A new greenhouse perennial, with "a circular patch" of leaves like those of the Houseleek, and a long spike of rather small scarlet flowers. Neither the native country nor year of introduction is mentioned.

Gongora bufonia, (t. 2). A new Brazilian epiphyte, with curious flowers of a dingy yellow, spotted with a dull purple.

Euthales macrophylla, (t. 3). A new Australian perennial, with yellow flowers, raised from seeds sent to Captain Mangles (to whom the floricultural world owes so much) by Mrs. Molloy. The flowers are yellow, with a brown spot in the centre, and they are produced in great abundance.

Spiræa Kamchatica, var. *himalensis*, (t. 4). A new perennial Spiræa with white flowers, from the Himalayas, which is quite hardy in British gardens. It was raised from seeds imported by Dr. Royle in 1838.

Martynia fragrans. (t. 6.) A half-hardy Mexican annual, of great beauty and delightful fragrance. Its form is very similar to that of the three species of Martynia figured in Plate 40 of my Ladies' Flower Garden of Ornamental Annuals; but the colour, which is of a purplish crimson, is much finer.

Plate 5 contains five flowers of different kinds of Catasetum, of no interest except to the growers of Orchideous plants. All the plants in the Botanical Register for January have never been figured before.

In PAXTON'S MAGAZINE OF BOTANY the plates are the following:—

Vanda tessellata. A Chinese epiphyte, introduced in 1810, and before figured in Bot. Reg., t. 506. This is a very beautiful plant, and the drawing is very well executed. It is generally known in the nurseries by the name of *Vanda Roxburghii.*

Brunonia australis, introduced in 1834, and before figured in the Bot. Reg., t. 1833. An Australian perennial plant, with a blue flower, resembling in shape the Sheep's scabious of British commons.

Chelonè Lyonii, introduced in 1812, and first figured in the Bot. Mag., t. 1864. A well known showy perennial, common in gardens.

Gloxinia rubra. A new and splendid species of Gloxinia, with bright scarlet flowers, a native of Rio Janeiro. It is a stove plant, and may be procured in the Epsom nursery, and of Messrs. Low at Clapton.

Only one of the plants figured in Paxton for this month is new; and that is *Gloxinia rubra*, which is certainly a most magnificent plant.

In THE BOTANIST, the following plants are figured:—

Obeliscaria Drummondii. No. 201. This is the well known plant generally called Rudbeckia Drummondi; and which was before figured under that name in Paxton's Magazine of Botany, Vol. VI., p. 51. The plate in the Botanist is very beautifully executed by Miss Maund.

Witsenia corymbosa. This plant was introduced in 1813, and was figured in Bot. Mag., 895.

Stephanotis floribunda. This beautiful plant is here figured for the first time. It is a native of the Isle of Bourbon, and was introduced about 1838. It is a stove climber; and there are very fine plants of it in Knight's nursery, King's Road, Chelsea, and, indeed, in most of the other London nurseries.

Ipomœa Platensis. A beautiful South American Ipomæa, introduced in 1817, and figured in the Bot. Reg., t. 333.

Cypella Herberti. A very fine bulbous plant, which has been frequently figured before.

Acanthephippium bicolor. A very curious and beautiful plant from Ceylon, introduced in 1833, and figured in the Bot. Reg., 1730.

Only one of the plants in the January No. and supplement of the Botanist is now figured for the first time; and that is *Stephanotis floribunda.*

In THE BOTANIC GARDEN are the following plants:—

Rhododendron Myrtifolium, *Tradescantia spicata*, *Hypericum Uralum*, *Campanula macrantha*, all of which have been figured before.

A History of British Ferns. By Edward Newman, F.L.S.

Notwithstanding the beauty and variety of the Ferns, which are so abundant in this country, and the remarkable forms of those of the tropics, till lately the culture of Ferns was comparatively neglected. Now, however, as Mr. Newman observes, "the cultivation of Ferns is becoming a fashionable pursuit." British Ferns are planted with very good effect in shrubberies, and exotic ferns have hothouses, with "shady dripping caves" of stones or brick-work, appropriated exclusively to them.

In his preface, Mr. Newman tells us, that "it was while wandering among the Welch mountains, in the autumn of 1837, that I first felt my desire to know the names of Ferns. I had often observed the variety that half covered some of those bleak and desolate regions where fern is cut, dried, and housed, as the only litter that can be obtained for horses; but now, for the first time, I gathered hundreds of fronds, and employed the evenings in arranging them into supposed species. I found that three species were abundant in the most dreary and exposed wilds; but where some rill tumbled over a precipitous bank, or a ledge of rocks, keeping the surface in a state of perpetual moisture, half a score others were sure to be growing: in the chasm at Ponterwyd I think I counted fourteen distinct kinds." *Pref.* viii.

On examining the botanical works in which ferns are described, Mr. Newman found that it was very difficult to identify his specimens by the specific characters laid down, as these depended principally on the leaves or fronds, the indentations in which vary exceedingly in different plants of the same species. To aid the student in overcoming these difficulties, Mr. Newman has given such clear descriptions of all the commonest species of British ferns, illustrated by beautifully executed wood engravings, as to enable any person to identify a species at first sight.

QUERIES AND ANSWERS.

KEEPING HALF-HARDY PLANTS DURING WINTER.

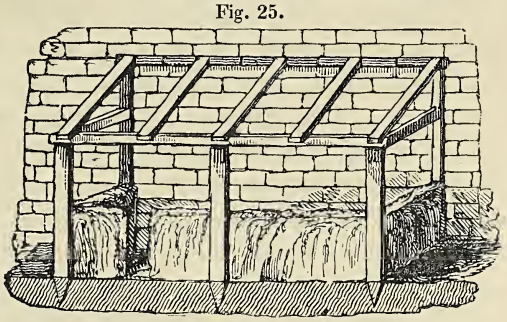
I have no garden, but as I have a large balcony, I have many greenhouse plants, which look very well during summer, but which give me a great deal of trouble in winter. I have been obliged to line all my windows with them, and I have flower-stands full of them in all the living rooms; but there are still many which I am quite at a loss how to dis-

pose of. As it is neither agreeable nor wholesome to sleep with plants in the room, I cannot put them in the bed-rooms; and some that I placed in a spare attic, though I have been told that the upper rooms of the house are the warmest, were frozen. We keep horses, and, consequently, I can easily obtain manure; but this is of little use, as I have no hotbed frame, and the expense of purchasing one would be more than my plants are worth.

STANHOPE STREET, CONNAUGHT SQUARE,
January 8th, 1841.

The best mode of protecting plants, under the circumstances mentioned, is, to have a frame made of wood (which can be put together by any common carpenter), erected against the wall of the stable, or in any convenient place, where it will be out of sight. When the frame is erected, a wall of manure should be formed, as shown in fig. 25; or if manure cannot be readily obtained, turf, or stones, or bricks lined with straw or hay will do. Within this wall the pots may be placed as closely as possible; and where manure can be obtained easily, a little may be laid on the earth in each pot. Some Russian matting, old carpet, tarpauling, or baize, may then be nailed over the top and sides of the frame, and a piece left loose to hang down in front like a curtain. When the weather is very severe, an additional covering of matting, or old blankets, may be thrown over the frame; but the curtain in front should be thrown up to admit the air, whenever the weather is sufficiently mild; and the mat in front should be kept fastened up, and an oil-cloth thrown over the frame in continued rains, lest the plants should damp off.

Fig. 25.



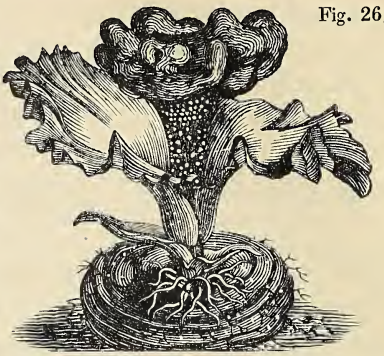
THE EAST INDIAN YAM.

Can you tell me the name of the accompanying root? The part sent is, as you will perceive, cut from a tuber of large size, and it was sent to me from Bengal.

PORTSMOUTH,
January 6th, 1841.

The tuber sent is that of *Arum campanulatum*, figured in the Botanical Magazine, vol. 55, t. 2812, of which our fig. 26 is a reduced copy. This curious plant is a native of Ceylon, but it is cultivated in different parts of the East Indies as an article of food. The tuber is flat, and appears marked with circular lines, which look like the folded skin of a rhinoceros. From the centre of this, a single large deeply-cut leaf is produced, from a foot and a half to two feet high. The flower rises from a short green stem, from the base of which, above the tuber, proceed a few fibrous roots. The flower appears at a different season to the leaf, and it consists of a pale pinkish-purple spathe, of a thick leathery texture, inclosing a deep blackish-purple spadix, or head. It has flowered in England in the collection of the late Robert Barclay, Esq., at Bury Hill, near Dorking. Its name in Hindostanee is Muncha-kunda; and its tubers in India have been known to weigh eight or ten pounds each.

Fig. 26.



EARTH-WORMS.

Are worms injurious, and do they eat leaves? I have often observed leaves left sticking partly in the ground at the openings of worm-holes, and I have never yet been able to ascertain of what use they were likely to be to the worm.

PORTSMOUTH,
January 6, 1841.

In a field, worms have a good effect, as they lighten the soil, and render it pervious to the air and rain; but in a pot, every passage of the worm tears asunder the roots of the plant, which are pressed close together from the smallness of the space in which they are confined, and thus it does a serious injury. "The common earth-worm moves by bristles, with which the rings of its body are furnished, and which enable it to move either backwards or forwards at pleasure; and it emits a slimy substance which facilitates its passage through the earth; this slimy matter adheres to leaves and other substances, which the worm drags after it along the surface of the ground, but which, as it cannot take them through its passages, they being only large enough to admit its own body, it leaves at the mouth of the hole where it disappears."—(*Ladies' Companion to the Flower Garden.*)

VISITS TO THE NURSERIES.

Knight's Exotic Nursery, Chelsea, Jan. 11.—THERE perhaps never was a time when this well-known nursery was so devoid of flowers as at present; but it contains ample promise of beauty for the first months of spring. Almost the only plants in flower, even in the stoves, are *Ixora rosea*, a very beautiful species; *Goldfussia anisophylla*, a pretty little plant with pale lilac flowers; and *Geissomeria longiflora*, a Brazilian plant, with tube-like scarlet flowers. There are also some fine plants of the new evergreen climber, *Stephanotis floribunda*, which was very ornamental, though not in flower. In the Geranium-house were some fine plants of *Luculia gratissima*, with large and healthy flower-buds, just ready to expand; it seems evident, indeed, that this fine plant, though it will bear forcing well, is as hardy as the common *Hydrangea;* and there is no doubt but that it would stand out in favourable situations. In the dome-roofed greenhouse the large Nepaul Rhododendrons are showing so many flower-buds, that they promise to present a splendid scene in May. Nothing can, indeed, exceed the brilliancy of colour displayed in these flowers, and it can only be compared to the brightest and purest carmine. The beautiful *Ipomœa Learii*, which was so much admired during summer, and which continued in flower till November, has now lost all its flowers, and is not ripening any seeds; but its congener, *I. rubro-cærulea*, which is in the same stove, has still some flowers, and is loaded with nearly ripe capsules. In the orchideous-house there is a pretty little lilac *Oncidium*, and some beautiful specimens of club moss (*Lycopodium stoloniferum*, *Brazilianum*, and *dentatum*). Among the other interesting stove-plants was *Magnolia odoratissima* Reinwardt (*Talauma Candolli*, Blume), a native of the East Indies, with pale buff flowers, possessing a most delightful fragrance; and in the propagating-house were three kinds of *Dacrydium*, and *Phyllocladus trichomanthes*, all very beautiful coniferous plants from New Zealand.

HORTICULTURAL SOCIETY.

The Horticultural Society's meeting, January 19th. There were some very beautiful plants exhibited, notwithstanding the severity of the season. On the first table was a collection of heaths; one in particular, *Erica hyemàlis*, was beautifully covered with flowers. On the same table with the heaths was a fine specimen of *Epacris impressa*. Among the cut flowers on the second table were specimens of *Poinsettia punicea*, and *P.*

lutea, the former, as Dr. Lindley elegantly and truly observed, looking like a plume of crimson feathers. There was also a punnet filled with the flowers of *Dendrobium nobile*, and some cut specimens of the beautiful *Dendrobium monoliforme;* both kinds growing in a lower temperature and with less care than most other *orchideous epiphytes*. There were also beautiful specimens of *Lælia anceps*, and of *Oncidium Cavendeshi*.

FLORAL CALENDAR.

FEBRUARY.

One of the principal things to be attended to with half hardy plants in this month is to give them air; as they are now very liable to damp off. This is a very good season for sowing imported seeds, or those of oranges or any half hardy shrubs. These seeds should be sown in light mould; and they do best in a slight hot-bed—though if carefully nursed and kept in a double pot, they will succeed in a room. Seedling oranges, however, are a long time, if left to themselves, before they flower; but if grafted when they are about two years old, they will flower and bear fruit when quite small. Cuttings of some kinds of greenhouse plants may be made in this month; but they should be planted in pure sand, and only deprived of the two lower leaves. Some persons cut off the tips of the leaves when they plant cuttings; but this, which is an injurious practice at all times, is particularly so in very early spring, when the sun has but little power.

In the open flower-garden, turf may be laid down, or grass seeds sown where necessary; and where there is a hotbed, half hardy annuals may be sown in pots filled with light earth. It is much less trouble and expense, however, for the amateur gardener to purchase them from a nurseryman in May, when they are ready to transplant into the open border. Mr. Hopgood, Craven Hill, Bayswater, from whom I procure mine, sells fine plants of the tender annuals at from 3d. to 6d. a dozen, according to their rarity, and thus for two or three shillings enough may be procured to stock a suburban garden, and to keep up a brilliant display all the summer. Gravel walks are generally raked over and rolled towards the end of February; and box edgings are planted or renewed. The beds in the flower-garden are also dug over and raked, preparatory to the sowing of the Californian annuals; or to the transplanting of them, if they have been sown in autumn, and suffered to remain in some waste corner of the garden during winter.

Daubentonia Tripetiana — *M. Trissets Daubentonia*

Day & Haghe Lith.rs to the Queen.

DAUBENTONIA, *Benth.* THE DAUBENTONIA.

Nat. Ord. Leguminosæ. *Lin. Syst.* Diadelphous-Decandria.

Generic Character.—Calyx campanulate, five-toothed. Keel very blunt. Vexillum roundish, stipitate. Legume stalked, oblong, compressed, furnished with four wings, and with the seeds interrupted with a spongy substance.—(*G. Don.*)

DAUBENTONIA TRIPETIANA, *Poir.* MONSIEUR TRIPET'S DAUBENTONIA.

Engravings.—Our Plate 3.

Specific Character.—Leaves with 12—15 pairs of oblong, obtuse leaflets, which are mucronate at the apex.—Racemes erect, superaxillary, a little shorter than the leaves.

Description, &c.—This beautiful plant has long racemes of from fifteen to twenty-five flowers, and abruptly pinnate leaves, with oblong stipules. The flowers resemble those of the pea in form, but they are of a most brilliant carmine; the standard, which is generally more than an inch broad, being of a much deeper tinge than the keel and wings, which are nearly orange. The flower-buds are of a beautiful orange scarlet, with a dark red calyx, and a purplish foot-stalk. The leaves are glaucous, and somewhat silky below, and of a dark green on their upper surface. They are alternate, and the flower-stems do not spring from their axils, but above them, so as to be quite distinct.

The species is a native of Buenos Ayres, whence seeds of it were sent by M. Boquin, first physician of the government there, to M. Tripet Le Blanc, Boulevard des Capucines, No. 19, Paris. M. Le Blanc, who is one of the first seedsmen and nurserymen in Paris, sowed the seeds in February 1840, in a hotbed-frame. They came up in three weeks, and growing rapidly, by August in the same year they had become handsome plants three feet high, taking a tree-like character, with a straight stem, woody at the base, and a branching head. About the 15th of August some of the plants which had been potted, and several times shifted into larger and larger pots, and afterwards plunged into a bed in the open air, began to show flower-buds; these buds springing, as before remarked, not from the axils of the leaves, but from a clear part of the stem, above the buds in the axils of the leaves, and quite distinct from them. The racemes when they first appeared were small, but they gradually elongated themselves as the flowers expanded, till at last some of them were about six inches long, with (as before observed) from fifteen to twenty-five flowers on each. As the plants grew, fresh flower-buds appeared, so that long after the flowers in the lower part of the tree had fallen, and when

the pods of seed were nearly ripe, there were some flowers in full beauty, and others just expanded, or in the bud, towards the extremity of the branches.

The extraordinary beauty of the flowers, their great abundance, and the length of time they continue to appear in succession, will render this plant extremely valuable, though the flowers have no fragrance. The principal advantage is the long duration of the flowering season; and it is probable from the general habit of the plant, that if planted in the free ground in a conservatory, that it would continue flowering the greater part of the year, though in the open air it is killed down to the ground by the first sharp frost.

The genus *Daubentonia* was first described by Mr. Bentham, from two dried specimens of different species, preserved in the Imperial herbarium of Brazil; and it was adopted by M. De Candolle in his Synopsis. Neither of the species alluded to corresponds with *Daubentonia Tripetiana*, which it appears probable is the first specimen of the genus grown in Europe; as, though there was a plant supposed to be a kind of Daubentonia from the dried specimens preserved, was grown in the gardens at Malmaison above thirty years ago, its identity seems doubtful.

The genus most nearly allied to *Daubentonia* is *Piscidia*, the Jamaica Dogwood, but the genera differ in several important particulars. All the kinds of *Piscidia* are also stove plants, while the *Daubentonia* only requires protection from frost, and is about as hardy as *Clianthus puniceus*.

The present plant was first described and named by M. Poiteau, in the Annales de la Société d' Horticulture de Paris; and plants may be obtained of M. Tripet Le Blanc, Boulevard des Capucines, No. 19, Paris; who has also plants of the Paulownia.

ON ROCKWORK.

BY THE EDITOR.

(*Concluded from p.* 44.)

The kinds of Rockwork which I have previously described, have been on a large scale, and adapted for places where rockwork constituted the principal feature; but it is often useful in gardens, in detached places, where it is only required to diversify the scene. It must not be supposed however, that rockwork ever looks well placed on a level surface without

any preparation or reason appearing for it; but there are few places of any extent where there is not some partially secluded part leading to a piece of water or a kind of grotto, in which rockwork might not be introduced by the hand of taste with very good effect.

Rockwork looks particularly well leading to a grotto; and when thus applied, a path should strike off from the main walk leading into a dense mass of trees and shrubs. On the sides of this path, first some inequalities in the turf should appear; and a little further, portions of stone should appear to have burst partly through the turf, by which they are yet partially concealed. Then stones should appear irregularly piled one on another, and in the interstices should be perceived some alpine plants; and in this manner the rockwork may be carried to any extent that may be desired, till it ultimately terminates in the grotto, cave, or secluded pond, to which it was to form an introduction.

A rustic bridge may be introduced over a piece of water, should such

Fig. 27.

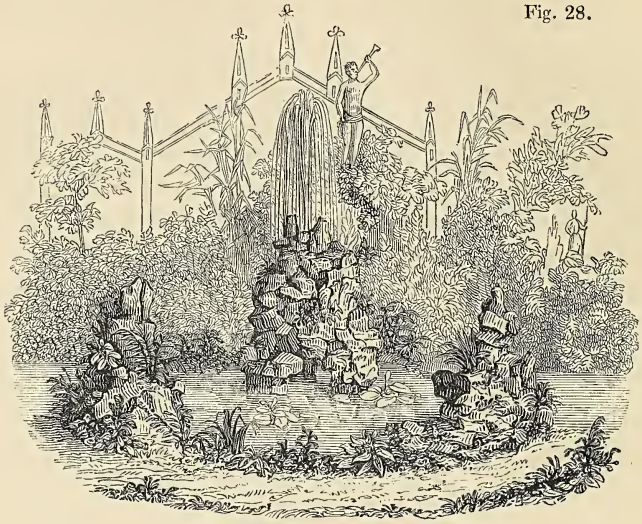
RUSTIC BRIDGE AMONG ROCKWORK.

occur (see fig. 27); and a few birds, such as are usually found in rocky places, may be introduced to heighten the effect of the scene.

As a specimen of rockwork in a small garden, I cannot do better than refer to the examples of it at Mrs. Lawrence's late villa at Drayton-green. In this garden rockwork was, in one situation, introduced round a small

piece of water (see *fig.* 28); and, in another, was a rocky arch leading

Fig. 28.



ROCKWORK ROUND A POND.

to an adjoining garden (see *fig.* 29). Rockwork of this kind is extremely difficult to manage; and it requires great taste and great skill to prevent

Fig. 29.

ARCH OF ROCKWORK.

it from becoming too prominent: it should indeed never be introduced unless there are a great number of other ornamental objects in the garden.

ON THE NATURAL LOVE OF FLOWERS.

BY R. G.

The love of flowers is so universally inherent in youth, that scarcely an exception can be found amongst children; whether inhabiting the confines of our cities or exclusively nurtured in the provinces, all have a peculiar interest in the vegetation of the various seasons as they unfold their several charms. We have all of us in the spring of life felt ardently and with singular enchantment the vernal floral developments. Who in his suburban rambles can forget the ecstatic exclamation at the first discovered snowdrop, primrose, or violet? the unalloyed delight in returning with this first tribute of approaching spring? How the eyes would sparkle with a peculiar lustre, when, in the elasticity of youth, we cull from some seemingly inaccessible spot a rare and favourite gem to enrich our posy, which the gentle meadow could not afford! And who is there, whose senses have not been regaled with the rich and refreshing perfume of such a nosegay? Alas! where are those senses and those feelings which conduced so much to the bliss of by-gone days? Has the lily lost its sweetness, the primrose its fragrance, and the violet its hue? or, rather, is man, from entering on a field of enterprise and speculation, become so completely overwhelmed in cares for his personal aggrandisement and the accumulation of wealth, as to be estranged from the unmingled charms of a garden, with all its endless variety of pleasures and luxuries? Can man be so dead and insensible to the beauties of nature? so ungrateful to a beneficent Providence? Is there no poetry in his composition? no benevolence in his organization? Has the love of gold rendered all his better feelings callous and obtuse? And has he neither time nor inclination to revert to scenes where the avarice of maturer years found no sympathy? Let us rather attribute the situation of such a one to the miseries of an age, out of which we are progressively escaping, when all such narrowed and sordid views must eventually fall a sacrifice to the inroads of science and the consequent enlargement of human happiness. The suburban residences which are already thickly studded around our cities, and are daily becoming more numerous, bid fair to invite other feelings and to cherish better hopes; but, alas! as we approach to examine these spots, our hearts are sickened at the portals. The common-place shrubs, numbering some half-dozen species, which economy has taught the builder to distribute, are alone to be found. Had the owner of such a residence retained but a tenth of his schoolboy enthusiasm for flowers, his collection of plants would at least have numbered thousands; and be it

remembered every plant has its name, and he would have known it; he would have watched it assuming different characters and clothed in its various garbs; and it would have embued his mind with interesting associations and numberless pleasing incidents. What thousands of moral lessons he would have been taught amidst recreations which the cynic and the latitudinarian never dream of! Could I but disengage him from his calculations, and invite him from his couch by the fragrance of the hawthorn or the rose, to admire the majesty of the oak, or the grandeur of the lofty pine, I should not despair of calling forth his latent feelings, even though his looks indicated that the freshness of youth was succeeded by maturer years, there would still be in store for him, in this department of natural history, endless sources of the highest order of intellectual gratification, endearing him to his family and his abode.

EXETER,
January, 1841.

ON THE ADVANTAGES OF GARDENING AS A MEANS OF PROCURING HEALTH.

THE following true story of the advantages of gardening as a means of procuring health, is sent for publication in the hope it may be of use to others; and the person alluded to is only withheld by family reasons from giving his name in full.

Mr. W. had, for many years, been labouring under disease, without exactly knowing the nature of his complaint, or being able to find any remedy for it. As he suffered greatly from indigestion and depression of spirits, he was advised to apply to Abernethy, and he took that celebrated person's "blue pill," and read through his "book," without deriving the slightest benefit from either. Still his nights continued sleepless, and attended with so much pain, that he was glad of any excuse to keep him out of bed; and his nervous system was so deranged, that, to use his own expression, "it would have been a relief if any one had shot him through the head." Weary of his life, and glad to relinquish his profession, he set out for London, thinking of nothing but of dying there. In the coach he happened to meet with a lady, to whom he mentioned his case; she entered with much feeling into his situation, and, having heard all his symptoms, at last said, "Did you ever try gardening?" "No," said he, "I never have; though I have seen and admired many beautiful gardens, and have always found gardeners a most intelligent set of men, it has never come into my head to enter into their pursuits; nor, indeed, do I understand

the most common operations of gardening." "Take my advice, however," said the lady, "and instead of setting yourself down in London, in bad air and confined streets, take a house in the suburbs, where you will be near enough to reap all the advantages to be derived from consulting the best medical men, and, at the same time, may regain your health by exercise in your garden." Mr. W. accordingly proceeded immediately to Bayswater, where he hired a small cottage surrounded by a tolerably large garden; and here, being ignorant of the superior kinds of gardening, he began by digging and manuring the soil, and planting cabbages! As the ground was very gravelly, and he thought the stones unsightly, he sifted a great part of it for sheer bodily exercise, till the perspiration used to trickle down his face in copious showers. In the course of a few weeks he began to find himself growing gradually better; he left off his doctors, and his family once more conceived hopes of a long and peaceful life being yet before him.

At the end of ten months, a neat house with a good garden in a better part of Bayswater was offered for sale, which he purchased in the year 1836, and where he has ever since resided, constantly occupying himself with gardening, of which he has now attained a sufficient knowledge to be able to produce excellent crops of vegetables, particularly of carrots, their growth being, no doubt, much favoured by the sifting the soil had undergone during the first years of his tutelage; for he continued the operation here as well as in his former garden. He now occupied himself principally with pruning and nailing his vines, fruit-trees, &c.; the violent digging and sifting being no longer necessary either for himself or his garden, as both are now in excellent order. As for himself, he enjoys better health than he ever did in his life, eating a breakfast like a farmer; occupying the hours not devoted to his garden in reading; enjoying all his meals, and quietly retiring to repose at ten o'clock, from which he awakes refreshed, with no unpleasant symptoms of tongue or palate: and never fails on all occasions to acknowledge that, to gardening alone, under Divine Providence, he is indebted for this happy state of existence.

Bayswater,
February 1*st*, 1841.

ON THE MEANS OF IMPROVING THE GENERAL APPEARANCE OF SMALL GARDENS, BY INTRODUCING PLANTS NOT IN COMMON CULTIVATION.

BY FLORA.

It has often struck me that there are many beautiful plants that might be introduced to give diversity to our gardens, instead of repeating the same things over and over again, till

> "Every garden looks just like another,
> And one long alley but reflects its brother."

To prove my assertion, let us only consider what are the bulbs usually found in gardens. You, madam, are now publishing a work on bulbs, and I am sure you must be aware of the truth of what I am about to say. The only bulbs we see in ordinary gardens are a few crocuses in spring, nearly all the oldest and commonest varieties; such as the Scotch crocus, the cloth-of-gold, the large yellow, the purple, and the cream-coloured; the latter two being of comparatively rare occurrence. In some gardens we find a few lilac and white varieties, but the common Scotch crocus and the cloth-of-gold are by far more common than any others; and yet I have been told there are eighty or ninety distinct kinds, including varieties.

After the crocuses come the Scillas or Squills, very pretty flowers, but the prettiest are the least common. I say nothing of the hyacinths, as those grown in the open ground are seldom worth looking at, unless they are in regular beds, and then they are generally the best sorts. The tulips are like the hyacinths in some respects, and particularly as far as regards florists' tulips; but there are several kinds that are quite hardy, and will grow in the open ground for several years without taking up, or occasioning any trouble. One of these is the yellow French tulip, which is not only very elegant, but very fragrant; a quality the more valuable, as the smell of tulips is generally very unpleasant.

When the tulips are over, there are perhaps a few plants of the common corn-flag, the crown imperial, the yellow, white, and Martagon lilies, the common daffodil, the poet's narcisse, the jonquil, and perhaps a few grape hyacinths, and the common star of Bethlehem.

I believe I have now enumerated the principal bulbs usually found in gardens; and though many of them are very handsome in themselves, we have seen them so often that we have become weary of them. Now, I am very fond of bulbous plants, and having a small garden which I manage myself by the help of a man-servant, I thought I would try

some bulbs that were a little out of the ordinary routine. I first procured some of the Cape Crinum. This will probably surprise your readers, as most persons are accustomed to look upon the Crinum as a stove plant. I had, however, a border just in front of the windows of the room in which I usually sit, sloping to the south, and in this I planted my bulbs. The soil is a fine sandy loam, and the ground is well drained, by a quantity of rubbish having been thrown into the bottom when the house was built. In this border my bulbs throve surprisingly. I had the common pale pink Cape Crinum, with a variety, the flowers of which were nearly white; others were dark crimson, and one nearly purple, while the fragrance from the bed was delightful. Every one who called upon me was delighted with my flowers, and everybody was wondering what they could be, as they had the appearance of rare and beautiful lilies.

The success of my first experiment induced me to try others; and I grew several of the most beautiful kinds of Gladiolus with great success. I then tried also with success a bed of Zephyranthes candida, the white Peruvian lily, the silvery flowers of which on the banks of the Rio de la Plata not only gave that name to the river, but have now, by implication, given its name to the Argentine (Silvery) Republic. I next turned my attention to common flowers; and I have now above a hundred and fifty named kinds of Narcissus, and about fifty kinds of Ornithogalum, all much handsomer than the kinds generally grown.

The greatest difficulty I have had to contend with in making these experiments, is procuring the plants, as few seedsmen (naturally enough) keep any but those for which there is a constant demand. No doubt, however, in this, as in most other cases, a demand would create a supply; and indeed I see in the catalogue lately published by Carter, Holborn, a number of names that I do not recollect ever seeing in a bulb catalogue before. Unfortunately, however, I do not live in London, and therefore I am not able to avail myself of the advantages accessible to those who do.

I hope that what I have said may turn the attention of some of your readers to the subject, as I have no doubt the selection of perennial plants in gardens might be improved quite as much as that of bulbs.

Weston, near Bath,
January 16*th*, 1841.

ON THE CULTURE OF MUSHROOMS.

BY J. O.

As you call your work a Magazine of Gardening, I presume you will occasionally admit articles of horticulture as well as floriculture; and thus I trust the following observations on the culture of mushrooms may not be considered inapplicable.

Mushrooms are in great request in all families, and at all seasons of the year, but a sufficient quantity is rarely supplied even in the autumnal months; to account for this, it is generally supposed that the production of them at any season of the year is attended with considerable expense. That this supposition is fallacious as regards the autumnal supplies, many gardeners are aware; for during that season mushrooms may be grown at little or no expense in a variety of ways. It is indeed surprising that the methods of growing mushrooms, known to most gardeners, are not more frequently practised; especially as, if they should not be attended with complete success at all times, the loss of the spawn may be regarded as the only expense attending the trial.

The most common methods of growing mushrooms at little expense are inserting pieces of spawn in melon beds on the lining, or in hotbeds of any kind, or in pots or boxes placed in stables or cellars; all these methods, however, having been frequently published, I shall not enter into details respecting them; particularly as I have never seen mushrooms equal to some, grown round hayricks, in the manner I am about to describe. These mushrooms grew, on what appeared to be a solid piece of road grit, the ground round the ricks having been made hard to keep the hay dry; the solidity of this bed appears to have been of great benefit to the mushrooms, and was, no doubt, one reason of their being superior in flavour and fleshiness to those grown in the fields; to produce them in similar situations pieces of spawn should be placed in holes an inch and a half below the surface, the holes to be then filled up and made as solid as possible. This may be done at any time after the rick is made.

Another method, and one which I have found productive of satisfactory results, is to make a number of holes in July or August on the lawn near the house, with a dibble having a flat end; in each of these place a piece of spawn wrapped in a little hay, put a little road sand in each hole, and tread the grass over it. The warm rains of autumn will generally bring up some very good mushrooms, and I have known this plan give peculiar satisfaction and delight to ladies and gentlemen, who are generally at their country seats in the autumn, and who are delighted to be able to go out

in the morning and to gather mushrooms for breakfast, with their own hands. It is also productive of good, in as far as it frequently leads to a morning walk, and consequently an increased appetite for breakfast. Thus, most beneficial results may arise from a few mushrooms being seen from the dressing-room window, growing on the lawn.

Respecting this method, I may observe, the success depends chiefly on the season, as, if that should be very wet and cold, few mushrooms may be expected; on the contrary, should it be mild, with occasional warm showers, a plentiful crop is the general result.

Sussex,
January 13*th*, 1841.

ON THE CULTURE OF TREVIRANA COCCINEA.

BY A LOVER OF GARDENING.

In my present communication I would wish to draw the attention of your readers to that splendid, yet neglected plant, *Trevirana coccinea*, formerly *Cyrilla pulchella*. I say neglected, because I rarely see it where it ought to hold a conspicuous place, as one of the most beautiful of summer flowers; I mean in the greenhouse. Possibly the reason may be, many persons believe it can only be grown and flowered in the stove: so those who have no such place, never attempt to grow it. Thus it is with many of our beautiful old plants; they are comparative strangers to our gardens, because we hear they are difficult to grow and manage, unless they receive some peculiar treatment, or be grown in some situation or soil which is beyond our reach. If any of your readers meet with a beautiful stove plant, and would wish to grow it, let me advise them to try it, although they may only possess a greenhouse; for I have proved that many plants generally grown in a stove, by proper management may be made to grow and flower well in the greenhouse, and some, I have good reason to believe, in the open air;—but more of this in some future letter.

To return to the plant under consideration. I have had it flower beautifully in the greenhouse by the following treatment; and its splendid appearance has amply repaid me for what little trouble I have taken with it.

In the beginning of March place a pot with the roots of last year's plants just as they were dried off in a hotbed, previously giving them some water to moisten the dry soil; when the plants have grown an inch or more high, turn them out of the pot, shake all the old soil from their

roots, and pot them singly into small pots, in a mixture of soil composed of four parts of very rotten leaf-mould, two parts light loam, and one part silver sand. When potted, again place them in the hotbed; and as soon as the roots appear at the sides of the pot, shift them into one a size larger, and replace them in the hotbed; in a short time they will require to be repotted a third and last time, after which they may be placed in the greenhouse to flower.

I have at times turned some of these plants out into the open border, where they have flowered very well; and I have no doubt, in a good soil and situation, they would do well in beds: but this must not be done until they are several inches high.

I deem it essentially necessary that the plants should grow an inch or two before they are potted the first time, though this is contrary to the general practice.

Tottenham,
January 30, 1841.

THE HISTORY OF THE CROCUS.

BY THE EDITOR.

Linnæus considered all the different kinds of Crocus to belong to one species, which he called *Crocus sativus;* Willdenow, however, who revised Linnæus's great work about sixty years after its first appearance, (in 1737) divided the Crocuses into two species, viz. the autumn-flowering ones, which he considered as varieties of *C. sativus*, and the spring ones, which he called varieties of *C. vernus*. Since his time, many other species have been found; but the grand division of spring and autumn flowering Crocuses still remains.

The true spring Crocus, *C. vernus*, is a native of Britain, particularly in the meadows about Nottingham. The leaves appear first, but they are only very short till the flowers decay, after which they gradually elongate. There are fourteen or fifteen varieties of this species, some of which are very handsome, but all retain the peculiarities of the parent, viz. a short thick tube, much shorter than the limb, and a somewhat egg-shaped, declining flower, which never opens fully.

Crocus versicolor is another species of which there are several varieties. It differs widely from *C. vernus*, being a little, widely-opened flower, the tube of which is nearly as long as the limb. Most of the varieties of this species have their flowers striped with reddish lilac; and they have all a sweet scent. Notwithstanding the small size and dwarf stature of the

flower of the species, the bulb is remarkably large. Some of the varieties are very handsome; as for example *C. v. purpureus*, the common purple.

C. biflorus, the Scotch Crocus, and *C. susianus*, the Cloth of Gold, are those that flower earliest in the season. They are both natives of the Crimea, and were introduced above two hundred years ago. The large yellow Crocus, *C. luteus*, is also a native of the Levant, whence it was sent before 1620, as a present to Henrietta, Queen of Charles I.; this unfortunate lady having been remarkably fond of flowers. This, the large cream-coloured, and the dark purple varieties of *C. vernus*, are the latest of the spring-flowering Crocuses, and the effect which they produce, when planted near together, is very striking.

The principal autumnal Crocus is that which produces the saffron, *C. sativus*, the drug being the dried stigma of the flower. This species is always easily to be distinguished from all the other kinds, by the stigma hanging out of the side of the flower. Of the other autumnal Crocuses *C. speciosus*, or *nudiflorus*, is by far the handsomest. It is a British species, and it flowers in October, without the leaves, which do not appear till the flowers have withered.

All Crocuses succeed best in a rather dry and poor soil; as, if the soil be moist and rich, they will produce offsets rather than flowers. The leaves ought to be left on all the kinds till they wither naturally, as it is only by means of the leaves that the plant can mature the new bulb which forms in the place of the old one every year. Crocuses do not flower well if they are removed too often, and they should not be disturbed oftener than once in three or four years.

SKETCHES OF NATURAL HISTORY.

BY MR. MAIN.

SPIDERS VERSUS FLIES.

THERE is no tribe of insects more vigilant in taking their prey, or more curious in their economy, than the genus *Aranea*, or spiders. They are found in every part of the world, but are most numerous in warm latitudes, and most active everywhere in summer, or when the weather is warm. Extreme cold renders them torpid; in which state those that live longer than one year pass the winter.

Spiders are oviparous; and lay their eggs in thickly-woven bags during the autumn; which bags are fixed in some dry corner of a building, or in a deep chink in the bark of a tree, until the warmth of the returning spring hatches the young, which immediately disperse from their birth-place, and enter on their business of weaving nets, and providing for themselves.

The generic distinctions of the family are:—first, they are *apterous;* that is, wingless; secondly, they have eight legs: and thirdly, they are furnished with eight eyes, variously placed in front, or along the sides of their thorax. One or two species have only six eyes, but it is a rare occurrence in this family.

With a few exceptions, the female spiders possess a store of glutinous matter in their abdomens, which they can eject at pleasure from a number of teat-like appendices, which form the tail of the insect; so that each apparent thread by which it hangs, or which it otherwise disposes of, is really composed of as many distinct single threads as the spider has teats or spinners. The thread thus formed is so exceedingly light that it is readily wafted before the wind: but after being exposed to the air a little while, it acquires a considerable degree of tenacity, as well as elasticity, on which last property, indeed, the strength of the threads and tissues depend. The female insect has the power of emitting one or several separate threads at will: and always, when in removing from one place to another with which she is not acquainted, she constantly emits a thread to serve as a cable, lest she should lose her footing. The males of all the species are very differently formed to the females; their bodies, particularly the abdomen, being more slender, and their legs longer: their fore-claws are also much stronger, and appear intended either for self-defence, or for seizing their prey, as they make no web for ensnaring winged insects as the females do. Neither have they any regular home; but they rove about from web to web, always, however, appearing to enter with caution, and seeming to wait an invitation, which is probably given by signs between themselves, which an observer cannot easily understand.

Different species choose different situations to live in: one inhabits the darkest corners of rural buildings, hence it is called the barn spider; and this kind attains a larger size than any other British species. The females invariably make in a corner a thickly woven web of a triangular shape, which is seemingly intended to receive anything that falls, or may alight upon it. The abode of the insect is formed like a bag in the inner angle, having a hole near the bottom to allow her to escape from danger, and

another at the top opening out upon the web, at the mouth of which she sits to watch for prey, as is well described by the poet:—

" . . . . gloomily retired
The cruel spider lives, cunning and fierce
. . . . . amid a mangled heap
Of carcases, in eager watch she sits,
O'erlooking all her waving snares around:
Near the dire cell the dreadless wanderer oft
Passes, as oft the ruthless savage shows her front;
The prey at last ensnared, she dreadful darts,
With rapid glide. . . . .
And fixing in the wretch her cruel fangs,
Strikes backward grimly pleased."— . . THOMSON'S *Summer*.

It is in this way the barn spider gains a livelihood, trusting more to her valour and strength than to her art in weaving snares for the entanglement of her prey. At certain stages of her life she casts her skin entire, retreating backwards out of it, and leaving the slough of all the parts hanging to the edge of the web. We know not whether this happens more than once to the same individual, nor whether all the species cast their skins, as several insects and some of the reptiles do; but this always happens to the barn spider, and probably to all those which live longer than one summer. The webs, both in size and texture, always correspond with the size of the owner: the extent of their span seems to be the regulating circumstance.

There are two other small, yellow-coloured spiders, which make their abode on the outside of buildings, and on ivy-covered trunks of trees. These are curious, but irregular weavers, and belong to that section which is ephemeral: they only appear at the end of summer, and soon totally vanish, after they have laid their eggs for the following year.

There are several species which live in holes in the ground: as soon as they have found one that suits their purpose as to depth and capacity, they line it neatly all round, leaving a hole, and sometimes two, at the top, for egress and ingress. Around these openings they spread a web on the surface, extending a good way on each side; and as it is attached to the mouth of the lining of the cell, vibrations from any living thing traversing the web are quickly felt by the watchful mistress of the snare, who rushes out to seize the invader, and drags the culprit into her den.

The Tarantula spider, of which so much has been written in ancient history, is a ground species, and very common in Spain, where it is not considered at all a dangerous insect. The hideous appearance of the generality of the tribe has gained for the whole a bad name, but without good reason.

There is a ground spider common in this country, which has neither house nor home, living constantly a roving life in fields and gardens. What makes this species more conspicuous than others is, the habit the female has of attaching her bag of eggs to her tail, and carrying it about her wherever she goes. It is a cruel boy's sport to dissever the bag of eggs from the mother, who, when thus deprived of the object of her maternal care, appears stupefied; turning herself round in great anxiety, and showing evident signs of distress. If the bag be again presented to her, she embraces it with all her limbs, and endeavours hastily to carry it away.

Another sort, of a black colour, middle size, and having very short legs, but extremely active, lives in a hole of a wall. The interior of the hole is smoothly lined, and round the mouth a web is disposed of a peculiar fabric; for instead of the lines being stretched tight from point to point over the surface, they seem to be left quite slack, like the hard-twisted silk of which crape is made; at any rate the threads are disposed so loosely that they form exceedingly fast fetters to the feet of flies which alight upon them, and which, indeed, can but very rarely extricate themselves. But, as soon as the spider feels there is a captive, she rushes out, and, as quick as thought, inflicts a bite on the back of the fly; she then instantly retreats to her cell, leaving the mortally wounded fly, after a few struggles, to die. I have seen the green-gold flesh-fly, as well as the blue one of the same size, killed in an instant by the poisonous bite of this remarkable spider; but I never witnessed her devouring any of her victims, which I supposed she did in the night, as they were always removed from the web before morning.

While this species trusts to the entangling property of her web, and the fatal effect of her bite, for her food, others there are which are roving marauders, depending on their cunning and bold daring in seizing flies, or any other insect that falls in their way. One of these is *A. scenica*, a small species of a grey colour, which inhabits dry ground or walls, especially when the sun shines on them, inviting flies to bask thereon. Here this spider exhibits all her art; and the observer will soon find that vigilance to discover, caution to surprise, courage to attack, and impetuosity in fighting, are all qualifications of this insect of prey. She walks stealthily along the hollows, or joints of the surface of the wall; every now and then turning round to look behind, or peeping over any prominence to discover a fly at rest. If the fly be too distant, the spider winds her way crouchingly round to gain a nearer station to spring from upon her prey. When near enough she prepares to leap, by bringing her feet under her body, and then at once darts away, pouncing upon the

heedless fly which she fastens on, and both falling to the ground together, when the fly is quickly despatched. This spider makes no web, trusting entirely to what chance throws in her way.

Besides domestic, field, and tree spiders, there is one which lives on the banks of rivers, and seeks its food in the mud at the bottom, by diving in a globule of air formed by itself; or else the animal is clothed with a kind of down or hair which repels the water, for when submerged, it looks as if covered with a coat of silver. Another is almost an inhabitant of the air; at least for the principal part of the time we know anything of it. This is the *gossamer* spider, which is one of the smallest, not being larger than a grain of millet. Of the economy of these insects we know but little: but their breeding place is probably dry ground, under trees, and hedges, or even on the surface of open fields and plains; because when the weather is favourable for their flight, they seem to rise from the surface of the ground everywhere, as well as from trees and hedges. They weave no web, unless it be bags for their eggs; but they never travel or move from place to place without leaving a thread behind, which serves as a tether, as well as gives a degree of buoyancy to the insect. In taking their aërial journey from any elevation, as trees, &c. their flight or movement is easily accounted for, because any current of air bears them along with it; but in the calmest weather they can rise into the air without other exertion than spreading out their arm and legs, as if to form a kind of parachute, and are quickly out of sight. In seeing them thus rising from the surface of ploughed land, or from the points of the stubble in the same field, I have often doubted whether it might not be the radiation of heat from the surface that carried the insects aloft. Some naturalists are of opinion that this insect has the power of raising itself into the air by electrical agency; and by the same means, propelling its threads in any direction, even against the wind. I have watched these insects for hours together, and seen them launch themselves into the air, and be borne away before the wind out of sight. I have also seen one of them remain on the point of a shoot with its head to the wind, and then ejecting a thread from its spinners, allow it to be carried away by the wind till it was many yards in length; and then quitting hold of the tree, be carried away swinging at the end of the flying thread up in the air.

From the vast quantity of gossamer threads which are sometimes seen covering stubble fields, hedges, woods, in short the whole face of the country, as well as endless clouds of them flying high in the air, some idea may be formed of the incalculable number of the spiders whence this light and fugitive matter proceeds. It is not known whether, like so

many of its congeners, this spider be predaceous, or if it be, of what its prey consists. We know not why the gossamer spiders take such long and lofty flights, or how it is that many of their threads become so interwoven in the upper regions of the air, as sometimes to fall in large flakes on the ground. It is only in fine weather that gossamer is plentiful, and mostly in autumn.

Several species of annual spiders inhabit low trees and bushes. They are called annual, because they live only one year: being very small when they first appear in June, and becoming full grown late in autumn, after which they totally disappear. One of these is a small yellow species, which weaves a remarkably complicated web; it may very properly be called a labyrinth, and seems intended to prevent any fly or other insect that enters ever finding its way out again. The web usually consists of two or three platforms parallel to each other, and horizontal in position. They are closely woven, and serve both for floors and ceilings; and are united by numerous perpendicular partitions and threads crossing between in all directions. At one corner, and usually under the covert of a leaf, the insect forms for herself a snug weather-proof retreat, in which she reposes, or keeps watch for her prey.

But the geometrical spiders, which live on hedges and shrubs, are the most dexterous and elegant weavers. Their net-like fabrics suspended nearly perpendicularly in the air, are most perfectly adapted for intercepting insects on the wing; and the address with which they choose a home for themselves, and a place suitable for commencing their toils, is truly astonishing. Their home is either a recess in the bark of a tree, or a concave leaf, either above or below the centre of the plane of the web; and to this shelter they retire in rainy weather, or to lay their eggs. The web is formed by the spider in some vacant space near her home; and it must be between two distant twigs, or other stationary bodies, which are requisite to support her principal lines. Her first manœuvre is to form a line, or bridge of communication, from one support to the other; and this she endeavours to do by trying round for some accidental passage. Foiled in this, she runs up to the top of the side she is on; and thence discharges from her spinners, and by the assistance of her two hind feet, several loose flocky threads, which are blown away by the wind; and as soon as she feels that one is attached to some other body in the right direction, she runs down it, spinning another line as she goes, and fixes both securely. Fixing a third here, she runs up the first, and down the side she started from, till she approaches the place near her home; and then pulling the last thread tight, thus forms her bridge across the space between the side supports.

The web is yet to be made below the bridge, and the necessary space is first circumscribed by boundary lines, which inclose as much as she thinks necessary for her purpose. She next has to find the central point of this inclosed space, an exercise of judgment which one would hardly expect a spider to possess; but this she does without either rule or light. She can readily make perpendicular lines, because she uses her body as a plummet; but how she can also dispose diagonal and radiating lines cannot be accounted for, without referring it to the wonderful power of mechanical instinct.

The inclosed space may either be rectangular or angular; and the central point is somehow determined by several lines crossing each other at very irregular angles. When this point is fixed on, the spider begins to spin as many radiating lines from the centre to the boundary lines, as will form the principal part of her fabric. When the radiating lines are fixed, she comes to the centre, and binds them altogether in a circular closely-worked tissue, which afterwards serves as a platform, on, or under which she watches for her prey. After this platform is completed, the operator next proceeds to steady and connect the radiating lines together, by fixing a temporary line from one to the other, but at considerable distances apart. The spider then begins to form the outer marginal line of the web, by first fixing a thread at a proper distance from the centre, which she carries in one foot, down one diverging line till she can reach the next, up which she runs till opposite the place where it is first fixed, and drawing it tight, fixes it there, at the due distance from the centre, and thus she goes from line to line round the exterior, forming, when she arrives at the point from where she set out, a very regular polyhedrous circle. When the first circle is finished, she begins a second a little way within the first; then another within the second, a fourth within the third, and so on all round, till the whole web is completed with concentric lines. There is one peculiarity relative to the position of these webs which deserves notice: it is, that they are rarely perpendicular to the horizon, but lying at an acute angle from a vertical line. It is impossible to account for this instinctive prescience of the animal, for her own weight as a plummet is a natural governing power, which in this case she must take means to counteract by drawing away the lower edge of the web from remaining right under the topmost line from which the whole is suspended. By attending to her manners, however, we soon perceive why the net is placed obliquely; she always keeps watch on the lower side, whence she can drop away in an instant from any threatened danger; the remains and offal of her prey also thus drop off without encumbering the web; and besides, these geometric spiders always attack and fetter their prey

from the under side. The act of securing a fly, or other insect, is very curious: when a fly is entangled, the spider rushes to the spot, but instead of seizing or wounding the captive, she quickly involves it in a winding-sheet, out of which it cannot escape. This she performs by resting or hanging by her two middle feet, one on each side of her prey, which, with her two fore feet, she keeps turning round and round, while with her hind feet she keeps drawing a strong thread from her spinners, alternately wrapping it right and left over the captive, until the latter is completely enveloped in a coat of the tissue. The spider then fixing a thread to the body of the fly, which she holds in one of her hind feet, cuts it adrift, and returns with it to the central platform, fixing it there to be devoured at leisure. If the web were not inclined to the horizon, the spider could not convey her prize across the web without tearing it to pieces. While on the watch she always rests on the centre platform with her head downwards, and from this station she has a private railway of a few threads leading to her dormitory.

In the foregoing description of the manœuvres and manners of the geometric spiders, I have had the diadem spiders (*Aranea diadema*) chiefly in view; for this species is by far the most conspicuous and common throughout the summer and autumn, both in fields and gardens; and the study of their manners, morning, noon, and night, is a most amusing occupation. The poet says,

> "The spider's touch, how exquisitely fine!
> Feels at each thread, and lives along the line."

And, indeed, the sensitiveness of these insects in feeling the least disturbance on the most distant line of their webs, and their caution in approaching the disturbing cause to ascertain whether it be a friend or enemy, are quite astonishing!

There are several species of spiders which weave symmetrical webs; but the manner of working and securing the prey is very similar in all. As soon as the frosts at the beginning of winter are felt, the field and garden spiders suddenly disappear, by retreating to dry coverts, where they die, or are devoured by insect-eating birds during winter. One other act of a spider's sagacity may just be added in conclusion. After a wet or dewy night, the spider finds in the morning her web heavily loaded with drops of water, to discharge which, she repairs to the centre, and poising herself on all her feet, gives her body two or three rapid convulsive shakes, by which the web is effectually freed from the hanging drops.

Chelsea,
January 29, 1841.

REVIEWS.

The Botanical Magazine for February contains figures of the following plants.

Musa superba, (t. 3849 and 3850). This plant was introduced in 1820, though it has not been figured before. Notwithstanding its name, it is very inferior in beauty to most of the other species of the genus.

Tropæolum brachyceras, (t. 3851). A well known species of Tropæolum, which has been often figured before.

Aconitum chinense, (t. 3852). A very handsome species of Monkshood, before figured in Paxton.

Penstemon heterophyllus, (t. 3853). Figured before in Bot. Reg.

Oncidium Wrayæ, (t. 3854). A Mexican Oncidium; new, though differing but little from several already in cultivation.

Two of the plants in the Bot. Mag. have not been figured before, and one of these is new.

In The Botanical Register the following are the plants figured :—

Solanum macrantherum, (t. 7). The Mexican Bitter-sweet. A very handsome greenhouse plant, with clusters of dark purple flowers, having, apparently a dark yellow centre, formed by the large anthers. In its native country, Mexico, it is a climber; but in an English greenhouse it may be treated like a bush. It is new, and may be procured from Mr. Page, nurseryman, Southampton.

Cyrtopodium Andersonii, (t. 8). A yellow-flowered orchideous plant, which has been twice figured before.

Brachycome iberidifolia, (t. 9). The large Swan Daisy. A most beautiful new dwarf annual, with large violet-coloured aster-like flowers, varying from a pale hue when first expanded, to the richest and darkest purple when long blown. "It flowers freely in the open border, but as it is impatient of wet, it may be taken up and removed in autumn to a greenhouse, where it will continue flowering till November." It was raised from Swan River seeds by Mrs. Wray, of Cheltenham, and seeds may be purchased of Mr. Lowe, of the Clapton nursery.

Sowerbœa laxiflora, (t. 10). A new rush-like plant from the Swan River, the flowers of which resemble those of an Allium, but are pink. It has no scent, and does not form a bulb. It requires a greenhouse in England.

Œnothera fruticosa, var. *indica*, (t. 11). A variety of the common Virgi-

nian tree-primrose, raised from Indian seeds. The leaves are less shining, and the stem shorter; the whole plant forming "a compact little bush, about a foot and a half high." It is quite hardy in the open border.

Ismene virescens, (t. 12). A new bulbous plant from Cusco, with greenish white flowers.

Four of the plants figured in the Bot. Reg. for February are new; and two of them, the Mexican Bitter-sweet, and the large Swan Daisy, are very handsome. Both these plants are sufficiently hardy to be planted out in summer, and are consequently valuable acquisitions to our gardens.

In PAXTON'S MAGAZINE OF BOTANY the plants figured are—

Huntleya violacea. A very handsome orchideous plant now figured for the first time, though it was introduced two or three years ago.

Hibiscus Cameroni. A very handsome stove Hibiscus, figured in the Floral Cabinet, in 1837.

Solanum jasminoides. A pretty climbing, evergreen Solanum, with small purplish flowers. It is a greenhouse plant, and is said to be a native of South America. It has not been figured before.

Fuchsia corymbiflora. Already figured in the Bot. Reg.

Two of these plants have not been figured before.

MAUND'S BOTANIC GARDEN. The plants figured are *Geum montanum*, *Ledum azureum*, *Astragalus virgatus*, and *Papaver commutatum*, the last of which is new.

THE BOTANIST contains—

Podalyria buxifolia, (t. 204). A pea-flowered greenhouse plant, already figured in the Bot. Reg.

Lathyrus tomentosus. No. 206. A new kind of ornamental pea, from Buenos Ayres.

Clintonia pulchella. No. 207. The well-known and beautiful annual.

Strobilanthes Sabiniana. No. 208. A handsome stove plant belonging to Acanthaceæ, before figured in the Bot. Mag. and Bot. Reg.

One of these plants is new.

A TREATISE ON AN IMPROVED MODE OF CULTIVATING THE CUCUMBER AND MELON. By GEORGE MILLS, Gardener to the Baroness de Rothschild, at Gunnersbury Park, Middlesex.

Though this work goes rather too deeply into the arcana of the art of gardening for most lady amateurs, there are some who may like to see how the seeming wonders of producing finely grown and finely tasted

cucumbers at Christmas, and Cantaleupe melons in May, are effected. To all such we recommend Mr. Mills's book; and those who have suitable establishments, we recommend to purchase it for their gardeners. Mr. Mills has detailed all his operations as clearly and fully as possible; and, as he has given all the dimensions of his improved pit, it will be in the power of any person who reads his book to erect one, with the aid of a common bricklayer.

MISCELLANEOUS INTELLIGENCE.

WESTERN AUSTRALIA.

EXTRACTS FROM A LETTER FROM MRS. MOLLOY TO CAPTAIN MANGLES, DATED JUNE, 1840.

"I gathered all the seeds, but those of the Isopogon, up to the very hour before I sent off my last box. You ought to be interested in the Isopogon and Petrophila, for they are beautiful beyond description, and such flowers of imagination! I am even now in raptures whenever I think of when I first discovered them; coming suddenly upon such gems, and finding myself surrounded by them, made me for the moment fancy myself in fairy-land.

"I should very much like to have some common red flower-pots. I have long wished for some, as I now only possess two out of the five that I brought out with me. These were filled with *Yucca gloriosa*, of which I have a hedge thirty yards in extent, at dear Port Augusta. I have frequently tried to get some flower-pots here but could not.

"As soon as I know the method of managing my seedlings, I will collect a nursery of plants for you, and range them under my veranda, which I make into a sort of conservatory. I will promise seedlings of Nuytsia, Isopogon, Petrophila, the blue Geranium, only found here, Anigozanthes, Verticordia, and in short, everything I should like myself. Pots will be useful for these, but for raising my own seeds I use perforated raisin boxes. I have only just received some seeds of Nemophila, &c., which were ordered from a nurseryman in Scotland in 1837! What a space of time, you will exclaim. In this isolated place no vessels coming to us direct, we have much to contend with; but as soon as our bay is known in England, I do not doubt we shall be frequently visited.

"I have a little musical instrument here which is like an organ and a piano united. It resembles a work-table in appearance, and being a wind

instrument it has the advantage of not getting out of tune. This instrument the children often dance to; and at dear Port Augusta I used to take it on the grass plat and play on it by moonlight; accompanied by the murmuring of the beautiful broad waters of the Blackwood gliding by; the distant roar of the bar, and every now and then the wild scream of a flight of swans going over to the fresh water lakes—the air being perfectly redolent with the powerful scent of the *Virgilia*, *Œnothera biennis*, some stocks, and some clove pinks that I had planted in the borders.

"Your box of plants is just opened, and we find that some of the trees have made shoots six or seven inches long, all white, of course, from the exclusion of light. The lily-of-the-valley has also thrown out long white suckers. The plants packed at the top and at the bottom of the box are in better condition than those in the middle. The stocks of the apricots were alive, but the grafts had withered; and the Verbenas, Myrtles, and Camellias were all dead. I think they do not do well in pots; the roots are so compressed, and the earth so dense, that it is difficult to keep it moist. The hyacinths are all vigorous, and one has produced offsets. I am afraid the double violets are only alive at the roots, the stems seem quite decayed; but considering they have been seven months out of the ground, they have arrived in excellent keeping. I have had them planted just under my window. To-day they have been severely wetted by the violence of the waves; and they would have floated had it not been for my vigilance in getting them planted just beyond the water-mark."

Fairlawn.

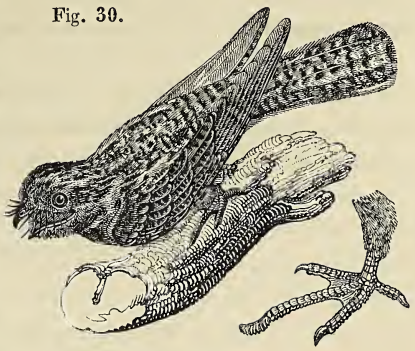
RETROSPECTIVE CRITICISM.

In Mr. Main's very interesting article on birds in your last number, though he describes the Goatsucker, or fern owl (see p. 57), he does not mention the very curious comb-like claw with which the bird's feet are furnished. He also says very little of the bearded Titmouse (p. 53), which I believe is the same as the Reed Pheasant; and if so, builds its nest in reeds. I cannot mention these trifling omissions, as they appear to me, without again adverting to the great pleasure I have experienced from reading the paper.

Rochester,
February 3, 1841.

The singular claw mentioned by our correspondent (see fig. 30), is supposed to be used by the bird exactly as a comb, to disentangle the bristly fringe which surrounds its mouth. This bristly fringe is supposed to be useful in retaining the moths, and other nocturnal insects on which the bird lives, and which it catches in its widely open mouth as it flies. This bird makes a very singular burring noise, something like that of a spinning-wheel; whence it has obtained its provincial names of the Dor-Hawk, and the Night-Jar. It always sits lengthways on a branch, as shown in fig. 30, and never across it, as birds do when they perch.

Fig. 30.



GOAT-SUCKER.

Fig. 31.

BEARDED TITMOUSE.

Fig. 32.

YOUNG BEARDED TITMOUSE.

The bearded Titmouse is often called the Reed Pheasant, from its generally making its nest among reeds, of which it eats the seeds. It also

feeds on insects and small snails, and when looking for its prey, it generally hangs with its head downwards, as shown in fig. 31. Fig. 32 shows a young bird of the same species before the growth of the mustachio-like appendages, from which the bird takes its English name.

Orthosiphon incurvus, see p. 58.—This plant was erroneously stated to have been figured for the first time in the Bot. Mag. t. 3847; as it appeared before in the Botanist for June, 1840, No. 173.

EXTRACTS FROM BOOKS.

Flued borders.—The vigour with which mules of the genus Crinum and many other plants grow out of doors against the front wall of a stove, persuades me that a great variety of plants might, with a little care, be cultivated better in the open ground than under glass, if the border in which they are to grow were flued under ground, and a tarpauling, or any other waterproof covering, placed over them at the times when it might be requisite to exclude either rain or cold. The covering might hang on the two sides of a strong longitudinal pole, like the two slopes of a roof, and be made to roll up either with or without a spring. There are many plants which seem to enjoy a cool atmosphere, but will not flower or thrive vigorously without the stimulus of heated earth at the root. Having chosen a situation where a furnace and boiler could be placed under ground, I would carry the smoke flue as far as its heat would extend on one side, and hot-water or steam-pipes in a different direction, as might be found convenient, enclosed in a stone or brick flue to as great a length as its influence might reach. In such a border, I believe the genus Hedychium, and many others, would flower perfectly with the assistance of fire in the summer, requiring nothing in winter but a covering to throw off the wet, and the heat might be turned into other pipes for the advantage of plants which might require the warmth in winter rather than in the summer. If in front of a wall, a moveable verandah, which might be either ornamental, or made of thatched hurdle, or hurdle-gates, would throw off the wet, which is the principal cause of injury in winter, for many shrubs will endure the access of severe frost to the head, if all wet can be effectually excluded from the base of the stem, and from the root by any sloped heading. Under such a verandah, with occasional heat to the flue during

the early summer, and perhaps in severe frost, Amaryllis, Brunsvigia, Buphane, Nerine, Hæmanthus, and all the allied genera of African bulbs, as well as the South American, would certainly succeed better than with any other treatment. I believe that not only those, but even some of the Tropical Crinums, would succeed better so than in a stove, and probably many shrubs, which might not be expected to live there. The advantage of a verandah or pent covering, however rude, on the north side of a wall for the protection of half-hardy plants, such as Camellia Japonica, the Asiatic species of Rhododendron, &c., is not sufficiently known. It is the excitement occasioned by the access of the sun that makes such plants liable to injury, and a south aspect, whether in summer or winter, is prejudicial to them. I believe that the covering of a pent roof in a northern aspect, without any flue, is more congenial to those plants than a greenhouse, with caution to prevent any heavy rain or snow from being driven upon them by a strong north wind, which is easily done by hanging mats along in such an emergency. (*Herbert's Amaryllidaceæ.*)

QUERIES AND ANSWERS.

THE PERSIAN CYCLAMEN.

Having read your first number with great interest, and seeing you admit of queries, I trouble you with some remarks on the cyclamens, at the same time begging you to assist me in treating their cultivation. I have from childhood been an admirer of all the species of cyclamen, whether of the neat little round-leaved, the hardy autumnal, or European, the sweet-scented hederæfolium, or the more elegant, and I believe the most delicate, the lovely Persian cyclamen, with its beautiful pink and white flower rising from the mass of richly tinted leaves; and I never fail, on visiting the Horticultural Gardens at Chiswick, to cast an eager glance on the lovely row that graces the left hand side of the entrance. But I see with regret that many of the varieties have of late years disappeared from this sheltered spot. The early season at which they usually flower, and their compact form, not to mention their surpassing loveliness, render them a desirable object for the sitting-room. I have now before me (February 10th) a pot containing several bulbs, with a profusion of deep, rich pink flowers, of *C. coum*, the round-leaved species, which is perfectly hardy. After flowering, I remove the pot to the open border, where I let it remain plunged without any care till late in the

autumn, when the flowers are tolerably far advanced for the next season. I then place it for a week or two in a room without a fire, and, when the flowers begin to expand, introduce it to the sitting-room, where it is a source of delight for several weeks. But the Persian cyclamen is more particularly the object of my favour, and having in vain attempted to raise it from seed, I shall beg of you to give me some hints on the subject, after hearing the failure of my attempt.

Some three years ago I was presented with a magnificent specimen of this plant, covered with flowers all proceeding from one large old bulb, which nearly filled the pot. As it appeared likely that the bulb would soon be exhausted, I determined to try to raise a fresh supply from seed, which I understood would flower the third year after sowing.

It is always an interesting object in the Persian cyclamen to watch the capsules as one blossom falls off after another, gradually coiling up in the long foot-stalks, till they at last reach the surface of the pot, where they remain to ripen on their mother earth. When the last of the beautiful flowers had fallen, I cut off all the seed-vessels but one—the largest and fullest—and plunged the pot in a warm border. When the seed was ripe, which I knew by the capsules beginning to burst, I sowed it in a small pot, expecting only one or two seeds to grow. How great was my surprise and delight, in about a month afterwards, to find as many as forty little plants springing up, which must have been almost as many as there were seeds in the capsule!

I now looked forward with great pleasure to being able to supply my friends with these beautiful plants, and had promised a bulb to several whom I knew to be as great admirers of them as myself. As the plants were very much crowded in the small pot, I transplanted them before winter, and was not a little proud to find they had made bulbs the size of a large pea. I placed them for the winter in a room with a southern exposure, without a fire—but here my mortifications began—one after another I saw the single green leaf springing from each bulb drop and wither; at first I thought the leaves were decaying naturally, previous to the bulb going into a state of repose, but from appearances I judged otherwise, and on examination I found that the leaf-stalks rotted off just above the surface of the soil. In this manner they all disappeared, with the exception of two, and with some anxiety I turned up the mould to discover the state of the bulbs. I found them all more or less decayed; some just beginning to blacken, others in a pulpy state, and some scarcely traceable in a gelatinous, slimy substance. The two which were still fresh I removed to a dry, airy cellar, in hopes of saving them from the general wreck; but on searching for the bulbs in the pot in the spring, I

found they had entirely disappeared! Thus ended all my hopes of a young progeny. I had heard that dividing the bulb was a means of increasing the plant; I therefore cut my old root in half, in hopes of producing two, and perhaps of renewing its growth in each; but, alas! this, too, failed, and for a time I could not look at my favourite plant with satisfaction.

Ought I to have left the bulbs for a year in the pot without transplanting? or ought the soil to have been anything different from garden mould? Being anxious to grow the bulbs very strong, perhaps the soil was too rich.

Could you inform me of the best method of increasing these lovely favourites? I find it more expensive than I quite like having a constant supply from the nurseries, the old bulbs rotting off and disappearing quite unaccountably. H. B.

London,
February 19th, 1841.

I fully sympathise with the admiration my correspondent expresses for Persian cyclamens, as they are, in fact, my favourite flowers; and I, too, have had hopes and disappointments about raising young plants, and keeping or losing old ones. The following observations are the result of my own experience, and of all I have been able to learn on the subject.

The Persian cyclamen is very easily injured by wet, and it cannot be kept in a state of vigour for any length of time, unless it be kept quite dry during its season of repose; and on this account the tubers should be taken up as soon as it has done flowering, and kept out of the ground like the bulb of a fine tulip, till the season for planting (September) returns. When the plant has done flowering, which will generally be about April, the quantity of water should be gradually diminished, till at last the earth becomes quite dry. The tubers should then be taken up, and laid, with the fibrous roots uppermost, to dry. When these have withered, they should be rubbed off, and the tubers kept quite dry in a warm place till the beginning of September. They should then be planted, (care being taken not to bury the crown of the tubers) and regularly watered; being kept as warm as possible till the leaves have expanded, and the flower-buds have formed, when the plants should be placed in a cool, airy situation to flower. Where there is a hot-bed frame, the pots in which the plants grow may be plunged in that; and where there is not, they should be kept in a warm room. It has been already mentioned that the tubers should not be entirely buried in the soil; in fact, they should be only lightly put in, the greater part appearing above the surface. The pots

should be well drained, a layer two inches thick of broken pots, or, what is better, of cinders, being placed at the bottom. The soil should be loam, mixed with thoroughly decayed leaves, or part of an old hot-bed. The plants should be regularly watered; twice a day when the weather is clear and dry, and once when it is moist or cloudy; but the water should never be suffered to stand in the saucers, the saucers being emptied as soon as the water has run into them. When the leaves have fully expanded, the plants should be allowed as much air as the weather will permit, to prevent any danger of their damping off.

To raise young plants, the seeds should be sown as soon as they are ripe, and the young plants should not be transplanted till the following April. They should be kept in a dry, warm, airy situation, and have very little water during winter; enough to prevent the fibrous roots from withering is all they require. In April the tubers should be taken up, without injuring the fibrous roots if possible, and re-planted in separate pots, well-drained, or in a bed in the open ground. The latter plan is best where the situation is dry, as it strengthens them very much; but care must be taken to cover them with a hand-glass if the weather should be cold and wet, though in fine weather they should have as much air as possible. In September the young plants should be taken up or re-potted for the winter, and, if kept warm, and nursed carefully, they will probably flower the next spring.

VISITS TO THE NURSERIES.

Hopgood's Craven Nursery, Bayswater Road, Feb. 8.—The severity of the weather has been such, as almost to destroy all relish for flowers; and, indeed, there were last month scarcely any to be seen. Now the early bulbs are beginning to come in flower, and Mr. Hopgood's greenhouses are rich in hyacinths of various dye, Polyanthus Narcissus, and Van Thol tulips. Besides these, he has a few Heaths yet in flower, viz.: *Erica pyramidalis*, *E. gracilis*, and *E. mollis*; *Epacris nivalis*, and *E. impressa*, both most valuable plants from the profusion and durability of their flowers, are also in full bloom; as are Chinese primroses of various kinds, and *Corræa speciosa*. *Rhodora canadensis*, *Azalea rubra*, and *A. pontica*, are in flower in pots, having been forced; and abundance of beautiful China roses.

HORTICULTURAL SOCIETY.

February 2.—The most ornamental plants were various plants from the garden of Sir E. Antrobus; among which was a fine specimen of *Epiphyllum truncatum*, grafted on *Cereus speciosissimus*, by which means it was rendered more hardy, and remains in blossom for three or four months. Mr. Mills, gardener to the Baroness De Rothschild, at Gunnersbury Park, exhibited some beautiful cucumbers, grown in his improved pit, very appropriately, as he has just published a book detailing his manner of growing them. A few other plants were exhibited, but chiefly from the gardens of the Society.

FLORAL CALENDAR.

MARCH.

Though it is generally both easier and more economical for persons residing in the neighbourhood of London to purchase their half-hardy annuals in May, when they are just ready to plant in the open ground, from some nurseryman; yet, as in the country this cannot always be done, it may be as well here to give some directions for making a hotbed for that purpose. In the first place, two or three barrows full of horse-manure should be procured, and if the manure be taken fresh from a stable, it should be thrown together in a heap, and turned over two or three times at intervals of four or five days, or more, according to the size of the heap; as the gases which first escape from the manure, during the process of fermentation, would be very injurious to the plants. As soon as the manure has lost its rancid unpleasant smell, it is said to be sweet, and is considered in a fit state for making the bed. When the manure is being turned over, if any part of it appear dry and musty (which it will do sometimes if the heat has been too great), it should be watered while the operation of turning is going on.

When the manure is ready, the bed should be made, taking care that it is six or eight inches larger every way than the frame which is intended to cover it. The ground on which the bed is raised ought to be a little higher than the rest of the garden, and when this is not the case, it is a good plan to put a little brushwood or faggots under the bed. The manure must be put on in layers, shaking it with a fork, and making each layer as even as possible; and occasionally beating it with the back

of the fork to make it firm. A bed for raising annuals need not be above two or three feet high, and it should be placed from east to west, so as to have the frame sloping towards the south. The frame must then be put on, and covered with a mat till the heat rises. When this is the case, the frame must be opened a little to let off the steam and bad air, but it must be covered again at night. In about three days the bed will have become sweet, which may be proved by putting a lighted candle inside the frame. If the candle burns, the bed is fit for being covered about six inches deep with fine mould, and as soon as this becomes a little warm, drills may be made in it, in which the seeds should be sown. The bed should afterwards be gently sprinkled with water. When the plants come up, air must be given freely every day, till they have unfolded their second pair of leaves, when they will be fit for transplanting into pots, where they may remain, being gradually hardened by more and more exposure to the air every day, till they are ready to remove into the open ground in May. Where there is not a regular sashed frame, four pieces of wood nailed together by a carpenter, and a lid covered with oiled paper, or oil-cloth, will do very well.

Among the annuals which may be raised on a hotbed, are Balsams, Coxcombs, the Globe Amaranth, the annual Ice-plants, Petunias, Salpiglossus, Schizanthus, the German Asters, all the Zinnias, Browallia alata, Calandrinia discolor, Clintonia pulchella, Bartonia aurea, Loasa or Caiophora laterita or aurantiaca, the Chinese Pinks, the yellow Everlasting, both species of Morna, the Lophospermums, and Maurandyas, Rhodochiton volubilis, the Eccremocarpus or Calempelis, the ten-week Stocks; the French Marigolds, the different kinds of Mimulus, particularly the Musk-plant, the Canary-bird flower (Tropæolum aduncum) Thunbergia alata, and several of the Verbenas. Many of these will succeed very well when sown in the open ground; but they flower earlier and stronger when raised in heat.

The other operations for March are taking up and dividing perennials, planting box edgings, repairing gravel walks, and, in short, putting the garden in order for spring.

1 & 2 Podolepis aristata ___ the bearded Podolepis
3 & 4 Trichinium Manglesii ___ Capt.n Mangles's Trichinium

PODOLEPIS, *Lab.* THE PODOLEPIS.

Lin. Syst. Syngenesia Superflua. *Nat. Ord.* Compositæ.

Generic Character.—Head heterogamous. Flowers of the ray female, ligulate, or nearly tubular; those of the disk hermaphrodite and tubular. Receptacle paleaceous. Involucrum campanulate, of many series of scales. Outer scales sessile, diaphanous; inner ones stipatite. Anthers setiferous at the base. Achania oblong, with a lateral areola. Pappus in one series, and rather combined at the base.

Description, &c.—The genus Podolepis is already known to the cultivators of ornamental flowers, from the very pretty little pink annual called *Podolepis gracilis*. That plant, as well as the present one, was a native of South Western Australia, whence it was introduced in 1827, and it has ever since been a favourite in gardens. There are three or four other species, all natives of Australia. Podolepis signifies a scaly foot, in allusion to the scaly involucre.

1.—PODOLEPIS ARISTATA, *Benth.* THE BEARDED PODOLEPIS.

Engraving.—Our *fig.* 1, in t. 4.

Specific Character.—Stem herbaceous, glabrous or woolly. Leaves stem-clasping at the base, oblong-lanceolate, somewhat cobwebbed above, and clothed with white wool beneath. Scales of involucrum acute, awned, yellow, never wrinkled, as in most of the other species. Flowers of the ray rather tubular, deeply quadrifid.

Description, &c.—This very pretty plant has numerous heads of flowers, which are corymbose at the top of the stem; and thus look at a little distance like a cluster of large yellow flowers. The involucrum is campanulate, and it consists of a number of large, loose, transparent scales, which give the plant the appearance of a yellow Rhodanthe. The plant is a native of the Swan River settlement, whence seeds were sent to Captain Mangles in the spring of 1840; and some of them, which were given by Captain Mangles to Mr. Hopgood, vegetated, and the young plants produced flowers late in the autumn, from one of which our figure was taken. The plant will probably prove a half-hardy annual, which, if sown in a slight hotbed in February or March, will be ready for planting out in May; or which may be sown in April or May in the open border. Probably, if raised in pots and frequently transplanted, it will form a large bush with hundreds of flowers, as is the case with the *Rhodanthe Manglesii;* and from the similarity in form, yet striking difference in colour, the two plants would produce a very good effect in beds, in a geometric flower-garden; or in pots or boxes for a veranda. The plants grown by Mr. Hopgood had long slender stems, but they were drawn up by having been kept under glass.

TRICHINIUM, *R. Br.* THE TRICHINIUM.

Lin. Syst. Monadelphia Pentandria. *Nat. Ord.* Amaranthaceæ.

Generic Character.—Flowers hermaphrodite, tribracteate. Perianth 5-cleft; segments linear. Stamens 5, connate at the base; filaments thread-like; anthers 2-celled; ovarium 1-celled and seeded. Style simple; stigma capitate; utricle with its one-seeded valve, conniving to the base of the segments of the perianth; apex spreading, and surrounded with feathery hairs. Seed lenticular-reniform, testa-crustaceous. Embryo annular, surrounded by a farinaceous albumen. Radicle centrifugal.

Description, &c.—This is a genus of curious Australian plants, the first species of which grown in Europe (*T. alopecuroideum*), was introduced in 1839. The genus is named Trichinium, which signifies composed of hairs, in allusion to the number of hairs found amongst the flowers. The species are all natives of South Western Australia, and they will all probably be half-hardy in British gardens.

1.—TRICHINIUM MANGLESII, *Lindl.* CAPTAIN MANGLES' TRICHINIUM.

Engraving.—Our *fig.* 2, in Plate 4.

Specific Character.—Stem simple, ascending, furrowed. Leaves spathulate, acute, undulated, smooth. Head large, ovate; bracteas linear-lanceolate, acuminate; sepals grooved and serrulated at the apex, which is bald, but covered at the base densely with very fine woolly hairs; stamens with the cup entire, and very short. Style glabrous.

Description, &c.—This is a most beautiful species. The flowers are quite glossy, and of a most beautiful pink at the tip, and silvery at the base. The head is very large, being generally three inches across. It is a half-hardy annual, which will flower freely in the open border; but which should be raised on a slight hotbed, and planted out in May, like *Helichrysum macranthum*. Nothing can exceed the beauty of the silvery plumage at the base of the flowers of this plant.

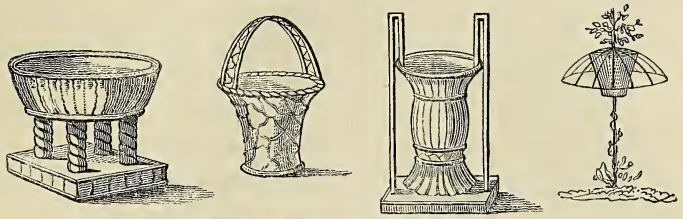
ON RUSTIC WORK.

BY THE EDITOR.

There are few objects in garden scenery that afford greater opportunities for the exercise of female taste than the designing of rustic work in garden scenery. The commonest materials, by the aid of skilful arrangement, may be so combined as to form highly ornamental objects. An old barrel or basket, a jar which has held grapes, or a tea-chest, may be converted by the magic hand of taste into a most elegant support for flowers. Perhaps no one ever carried this art farther, or produced a

better effect with it, than Lady Grenville. Some of the ornaments at

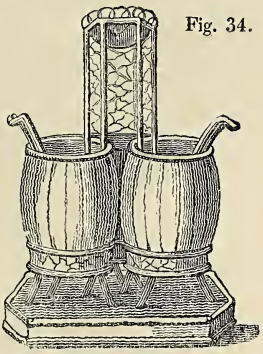
Fig. 33.



GARDEN ORNAMENTS AT DROPMORE.

Dropmore (see *fig.* 33) are formed in this manner; and the flower-stand (*fig.* 34) consists of two casks which had once contained Roman cement, but, when filled with showy flowering plants, it produces a splendid effect.

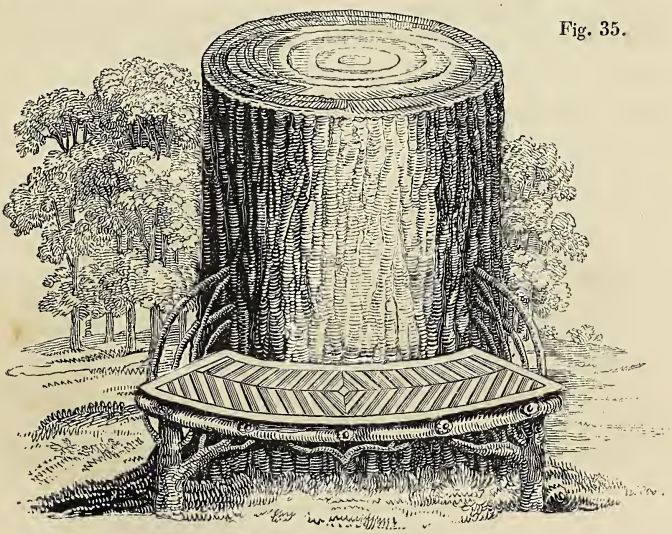
Fig. 34.



FLOWER-STAND AT DROPMORE.

Many very ornamental objects may be made of hazel rods, with the bark on, chosen as much as possible of the same size, and varnished. Sometimes half the rods may be peeled, and half used with the bark on, as shown in the seat (*fig.* 35). This seat was designed by a clergyman in Wiltshire for his own small garden; and it was executed by

Fig. 35.



GARDEN SEAT OF HAZEL RODS.

himself with no other aid than that afforded by a common labourer to cut

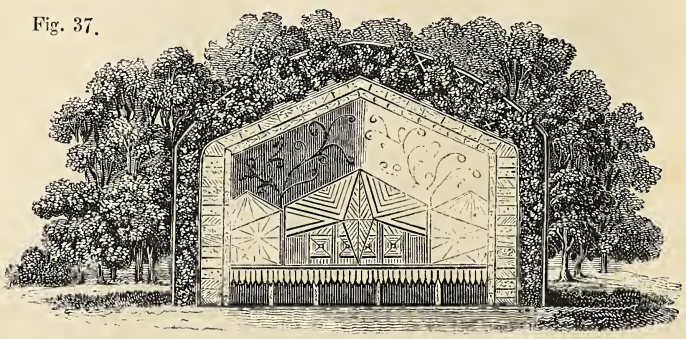
the wood. The same gentleman in the same manner constructed the flower-basket (*fig.* 36), which is made with alternate rods of birch and hazel, both with the bark on; the upper projecting part being formed of thin slabs of maple, sawn off a log of that wood, laid over each other, and attached by nails. The frame-work was made of deal; and the projecting parts, of some rods of hazel and birch thicker than the rest. A great variety of plants may be planted in such a basket, as, for example, dwarf roses and geraniums; and creeping plants may be introduced, such as Lophospermum erubescens, Maurandya Barclayana, and Lysimachia nummularia (money-wort), to hang down over the sides.

Fig. 36.

FLOWER-BASKET OF HAZEL AND BIRCH RODS.

In all cases where the materials employed for flower-stands are of very little value, the flowers grown in them should be in the highest possible state of cultivation, so as to appear in the greatest beauty and luxuriance. This is essential to show that the rudeness of the materials has been the result

Fig. 37.



ARBOUR OF HAZEL RODS AND MOSS.

of intention, and not of carelessness or poverty. It should never be forgotten in forming rustic work, that it is only by the exactness and

neatness of the execution, and the taste and elegance shown in the arrangement, that the coarseness of the materials can be sufficiently dignified to warrant their admission into ornamental pleasure-grounds.

Sometimes hazel and birch rods are employed to ornament the back of summer-houses, or arbours, as shown in *fig.* 37, part of which is filled in with moss. This seat was erected in the beautiful garden of the Misses Garnier, at Wickham near Fareham in Hampshire, from a design by those ladies. Many other similar examples of rustic work might be pointed out in different parts of the country; and to the credit of my own sex, I may add, that the handsomest I have seen have been all designed by ladies. It appears, indeed, as though the elegance of female taste were peculiarly adapted for the designing garden-ornaments for the reception of things so lovely and so elegant in themselves as flowers; and I have no doubt that many of my fair readers, if they were to take the trouble to sketch designs, might have garden ornaments formed at a small expense, far superior to any they could purchase.

ON ACCELERATING THE FLOWERING OF PLANTS IN THE OPEN AIR DURING THE WINTER MONTHS.

BY MR. GORRIE.

It is a fact well known to meteorologists, that the temperature of spring wells of moderate depth approximates nearly to the annual mean temperature of the locality wherein such well is situated; indeed so close has the approximation been found, that the temperature of springs has been supposed by some to afford data for ascertaining the latitude and elevation of the spot. And although generally this temperature does not vary much in course of the year, it so happens that the heat descending gradually to the bed of the spring, raises the temperature of the water highest in the winter months at this place, something more than 56 degrees of N. Lat., the mean temperature of the year is about 47 degrees Fahrenheit, and the water in several springs indicates the same degree of heat all the year. In the neighbourhood of London the temperature of air and spring water will be about 4 degrees higher.

The regularity of the supply of this comparatively warm medium in springs in the winter months will easily account for the beautiful verdure observable in the near vicinity of springs in winter; and to turn this to account is the object of this communication.

Having for several years preserved greenhouse plants in a zinc frame covered with glass, and sunk a few inches in a spring well, without any trouble whatever, except admitting a little air on fine days, and watering

occasionally, I have lately made the water of other springs in so far subservient to forwarding the blossoming of spring flowers in the winter months; the method of effecting this is exceedingly simple.

Suppose a spring well near any walk in the pleasure-ground, clean it out, and form round it a circle of about a yard in diameter, on which raise a semicircular mound on the north side, in the form of the letter C, to about two feet above the surface of the water, whereof a layer of small stones should form the foundation, well backed and covered with black loam, and on this bed plant crocuses, snow-drops, Christmas roses, &c.; then finish above with a slope a little easier than 45 degrees, formed with a compost of vegetable mould, sand, &c., and in this embankment insert primroses, dog's-tooth violets, Van Thol tulips, early-flowering Lychinideas, winter aconites, and other favourite spring flowers. And in a patch or two near the top, in a mixture of heath and vegetable mould, may be inserted the opposite-leaved saxifrage, *Androsace villosa*, or other early-flowering Alpine plants, and surmounted by the *Erica herbacea;* then, to give a feature to the spot as well as to add to its interesting appearance, plant on the north side a *Salix violacea*, to overhang the whole, and part of its twigs may be interwoven closely at about six feet above, and extending over the whole well to repel radiated heat, the rest of the willow should be allowed to take its natural form. I have fixed on this species of willow as being an early flowerer and its shoots gracefully pendulous. In the centre of the well I would recommend to place a pot with a plant of *Aponogeton Distachyon*, which will flower throughout the winter months. If the place is secluded and secure, a few gold-fish would render the well still more interesting, and would thrive well there in winter; in summer they should be removed to ponds easier affected by summer heat. All this to some may appear exceedingly trifling; but it is astonishing how much such innocent trifles adds to the pleasures of human life.

Annat Cottage,
December 2nd, 1840.

WILD FLOWERS.

Madam,—I am much pleased to see a new periodical launched into the world of letters under your special superintendence. I know no one who could bring forth such a thing with a better chance of success. You are near to a very copious fountain of horticultural novelties; and you have access to more of the richest collections of both books and plants than any one else in the kingdom.

But there is another circumstance which will redound to the general amusement and instruction of your readers. Many of your correspondents have bound themselves, either by accident or choice, to some particular section, order, or genus of the science; others to particular species, which absorb all their perceptions. Some are medical botanists, others chemical, or physiological, or dietetic, or entirely floral. All these are devotees, and so completely compressed within their own narrow boundaries, that they can neither by desire nor exertion see any thing beyond. They are bound hand and foot by their darling studies, and never deviate into variety.

Now you, madam, are free from all such trammels. You have not been *trained up* in any narrow exclusive path of the science, but have been brought almost at once to the "top of Pisgah," whence you have had a full view of the whole land of vegetation, and of its most striking beauties. Over the whole expanse you can roam unfettered and unbiassed, culling every thing that may be interesting, whether glowing from the torrid, smiling from the temperate, or shivering from the frigid zone. Whether rare and costly, or common and neglected; whether met with on every highway, or drawn from the farthest or deepest recesses of the green earth, none of any merit will escape your notice or regard, not even if found in the lowest rank of our garden outcasts.

It is in behalf of one of the latter description that I am now about to move your sympathy. There is merit in drawing modest worth from obscurity, and it is, I trust, as praiseworthy as enwrapping oneself in Dahliaism, or Pansyism, or any other exclusivism. The matter is this:—

About a month ago I had occasion to call at a public office where much business was doing by the officials at the different counters. The quiet stillness of the office was only interrupted by the opening and shutting of books, the chinking of precious metals, and the rustling of paper. But my attention was riveted to a single desk in one corner, on which was placed a very ornamental object. It was not a *Cereus speciosissimus*, nor a lovely variegated *Camellia*, nor a frame of Dutch bulbs in full beauty; no—it was none of these, but only a luxuriant specimen of the common Christmas rose! (*Helleborus niger.*) It occupied a No. 16-sized pot, the surface of which was completely covered with its scanty foliage and numerous flowers, in different stages towards full bloom. This, though an old familiar face to me, was yet a gay and refreshing spectacle, especially as snow covered the streets, and the air was rigidly cold. The view of this luxuriant plant was really a treat, never having seen it in such high health before; nor was I aware that the plant could, by a little extra care, be brought to such perfection.

This pleasing sight brought a train of ideas which, as somewhat practical may arise from them, I shall here put down. Why was not

the pot a little larger? (thought I to myself) for then a patch of its congener, the sweet hellebore (*H. odorus*), might have been thrust in to give a delightful fragrance as well as beauty to the room. Next followed another query: Why not have a box mounted on a stand, to form a domestic winter garden for *aged or sedentary florists?* Such a thing might easily be contrived which would be at once both cheap and successful. Let us suppose a box two feet square, six inches deep; the bottom formed of ledges placed not quite close together to allow of drainage into a tin case, in which the box is placed after being nearly filled with leaf-mould and a little sandy loam. The box would hold, besides the two sorts of hellebore (the name should not frighten timid people, because the plants are not intended to be eaten) patches, or what would be better, little pots, of aconite, snow-drop, crocus, cyclamen, hepatica, and a few hyacinths, which when done flowering, may be removed, to give place to the round-leaved campanulas, the money-wort (*Lysimachia nummularia*), and sweet woodruffe (*Asperula odorata*), and also a few annuals sown in the spring to keep the box floriferous all the summer. All these little beauties are common and cheap; and bringing them into a living room, is only introducing them to *see the owner*, instead of the owner going to see them in their native beds. Another advantage of such a portable flower-bed is, that such plants as are mentioned above may be seen to grow and flower; whereas, other plants of higher character usually employed for decorating rooms are, in most cases, only brought in to be seen—to die.

Very little floricultural skill would be required in stocking the box; and in giving water there would be but little nicety required, as there would be no danger of giving too much, (the most common error with potted plants) provided there was a plug at one corner of the tin case to draw off any excess of drainage from the box.

The pleasure of growing those little rustics is not diminished merely because they belong to the lower order; and if by accident they are lost or destroyed, no keen regret is felt, because so easily restored. They all possess a high degree of beauty, and when closely examined, present as curious a structure and as complicated a system of organic tissues, as the most celebrated production of India. A real lover of nature is never baulked by any feeling of fastidiousness as to the rank or private character of any subject of Flora's reign; and therefore, it is quite evident that as much real gratification may be derived from such an humble effort of floriculture, as from a far more costly apparatus.

This idea of a domestic flower-bed may be much extended, but I shall leave the detail to be drawn out in your own way; and if I have but furnished you with one useful idea, I have my reward.—J. M.

March 16th, 1841.

EARLY FLOWERING ACACIAS.

BY J. B. W.

All plants of which the natural season of blossoming under glass is in the winter or early spring months, acquire additional value from that circumstance; because their intrinsic beauty is then heightened by contrast with the "desolation that reigns without." Many of the New Holland Acacias possess this desirable property, which in some species is combined with exceeding beauty, as well as gracefulness of habit; consequently there are no plants better adapted for ornamenting a conservatory, where they can be allowed sufficient room to display unconfined their elegant growth. One of the finest species for this purpose is *Acacia dealbata*, of which there is a splendid specimen, now in the height of its beauty, in the handsome conservatory at Pains Hill, near Cobham, the residence of Mrs. Cooper. I have seldom seen a plant of any kind equal in beauty to this, its wide-spreading branches being completely covered with a garment of green and gold, or more strictly speaking, with green and deep lemon-colour; the latter colour greatly predominates, however, for the flowers are so numerous that they almost hide the pretty bipinnatifid leaves. This tree roots into a border beneath the floor of the house, and its stem was originally trained to one of the pillars that bear up the roof; but the stem is now larger than its former supporter, and the branches extend in different directions to a distance of several yards. It has been planted about eight years.

A fine plant of *Acacia vestita*, Lindley, grows against another of the pillars. This, from its profuse flowering and pendulous habit, is a very handsome species, and requires much less room than *dealbata*, which precedes *vestita* in flowering nearly a fortnight.—J. B. W.

February 10th, 1841.

[To these may be added, *Acacia armata*, a very free-flowering species, with flowers like golden balls; *A. Lophanta*, with long spikes of whitish flowers; *A. verticillata*, with whorls of leaves like spines; *A. melonoxylon*, the Black Wattle of the Australians, with very curious leaves, the footstalks of which look like leaves, with the real leaves hanging to the point of them; and *A. pubescens*, a very elegant species, with drooping branches and racemes of ball-like flowers.]

TIME FOR SOWING FLOWER-SEEDS.

BY D. B.

Nothing looks less cheering than empty beds on grass or gravel near the windows during winter; and of all the annuals or perennials none is better for furnishing the beds for the winter than the commonest varieties of single wallflowers. From a small packet of seeds, sown in April or May on a light piece of ground, and transplanted into any spare places, as many plants may be raised as will keep a large flower-garden quite green and gay all winter, and will be a good shelter for the bulbs coming forward. When the beds are wanted to sow or plant other things on them in spring, or in the beginning of summer, the wallflowers will, of course, be thrown away; or they may be transplanted to fill any vacant spaces in the shrubbery, &c., and left there to seed.

Clarkia may be sown in September, March, and May, and so may the Godetias; but Collinsia will not succeed if sown later than the first week in April, especially *C. grandiflora*, though this species will flower freely on the stiffest clay. I once threw the ripe herbage of *C. grandiflora* on a large heap of the best clay I could find for puddling, and which was lying at hand for that purpose: the barn-door fowls scattered the seeds all over the heap of clay, in pecking at them, and next May the whole heap was a splendid mass of flower—the plant seeming as much at home on the hard poor clay, as it could have been on the best prepared bed.

As the Californian annuals are very short-lived, they should have two or three sowings. The first in autumn, where they may stand the winter and be ready to flower early in spring; then in February, and the last in April. After this they won't do much good, as they are easily killed by too much heat. The best for spring sowing are Nemophila insignis, Gilia tricolor, Platystemon californica, Lupinus nanus, and Clintonia pulchella. All these are dwarf plants and very handsome. The Collinsias seldom do well if sown late; and particularly the beautiful Collinsia bicolor, which is very apt to become drawn up and weak. The large flowering annuals, such as the Godetias, and Clarkias, and Malope grandiflora, should have a rich soil and plenty of room. Clintonia pulchella also will not flower well unless the soil is enriched with vegetable mould, or part of an old hotbed, so thoroughly decayed as to be quite black.

ON THE CULTURE OF ROSES.

BY A LOVER OF ROSES.

Roses may be planted either in autumn or spring; but many persons prefer the latter. The advocates of spring planting say, that it is almost impossible to take up roses without injuring their roots; and, if planted with broken roots in autumn, when the plant is in a languid state, the wounded part is more likely to rot than heal; whereas in spring, when the sap is in motion, the vigorous state of the plant enables it to heal the wound immediately. However, though opinions may differ on this subject, there can be no doubt but that spring is the season for planting all the China and other delicate roses; and that the first week in April is the most suitable time.

The first point in forming a rose garden is to select a suitable situation, fully open to the sun and air; as, though some few kinds of roses may be planted as under growth under the drip of trees, the greater part must have abundance of light and air. The situation for the rosery having been chosen, care should be taken that the ground be well drained; and where the expense is not objected to, a bed may be excavated two feet deep, and a layer of brickbats, stones and rubbish, six inches deep, laid at the bottom. The bed should then be filled up with a compost of nearly equal parts of turfy loam, or loam from old pasture land, and vegetable mould, or very rotten manure, mixed with about the eighth part of the whole of sand. When climbing roses are planted for forming pyramids or pillars, a pit about eighteen inches in diameter, or rather more, should be prepared in this manner for each rose; and a similar plan should be adopted in every situation where any particular rose is wanted to grow with great luxuriance.

The bed or pit having been prepared, and raised a little above the general level of the garden to allow for the new ground settling, the roses should be taken up; and their roots having been carefully examined, and all the bruised parts cut off, they should be planted about two feet apart, if of the delicate growing kinds; or three feet apart, if of those kinds which are very strong and robust. Roses should always be planted carefully, with their roots well spread out; and they should be kept out of the ground as short a time as possible. They should be frequently watered for some time after planting; and a little fresh stable manure should be laid on the surface of the ground over the roots.

The hybrid China roses are the best for forming pyramids and pillars, as they make shoots generally from six to ten feet long every season, and

their branches are flexible as well as vigorous. Their foliage is also very luxuriant and healthy, and their flowers very beautiful, and of delicate and clear colours. They require a very rich soil, and when pruned their shoots should never be shortened; but those that have become old should be cut off close to the main stem, and abundance of young wood left, as shoots two years old always produce the best flowers.

The following are some of the best kinds of pillar roses:—Brennus, or Brutus as it is sometimes called, a profuse-flowerer, the roses being very large, of a most brilliant carmine, very finely cupped, and very double; Queen of the Belgians, a pure white, finely cupped; Drummond's thornless, a Boursault rose, with a profusion of small, pink, very double flowers; *Rosa Grevillii*, or the Seven Sisters, with large clusters of flowers, varying in colour, in the same cluster, from crimson and almost purple, to pale blush and almost white; *Rosa multiflora*, nearly allied to the last; and the Triomphe de Bollwiller, a beautiful cream-coloured, or rather pale buff flower, cupped, and very large and double, with large glossy evergreen leaves. To these may be added Jaune Desprez, a very curious rose from its singular colour, which is a sort of pink buff. This rose is extremely fragrant and very hardy; and, from being a very free-grower, it is well suited for a pillar rose. All the Noisette and Boursault roses, particularly *Rosa ruga*, are also well adapted for this purpose; as are the Banksia roses, though they, like *Rosa multiflora*, are rather tender.

Among the moss roses, the best kinds are, the common, the perpetual white (which often blossoms again in autumn), and the Rouge de Luxembourg, the flowers of which are crimson, approaching to purple; and to these may be added the crested moss as a curiosity. Of the cabbage roses, the common kind and Wellington may be chosen, the last being a very large carmine-coloured flower.

The other kinds of roses are so numerous and so often changing, that little can be said of them; but the following deserve a place in every garden. The double yellow Austrian and Scotch roses, and *Rosa Harrisonia*, sometimes called Hogg's double yellow; Rivers's George the Fourth, a splendid crimson rose, with shining, dark, reddish-green foliage, and of very luxuriant growth; the Village Maid, a striped rose; Rose du Roi, or Lee's crimson perpetual, a most valuable rose, which will flower in the open ground from May to November; the common Rose à-quatre-saisons; Madame Desprez, an Ile de Bourbon rose, which blooms in large clusters like a Noisette; Bengale triomphante; *Rosa indica* (the common China); *Rosa semperflorens* (the monthly China); *Rosa odorata* (the common tea-scented); and *Rosa Smithii* (the yellow Noisette),

though this rose does not flower well in moist seasons. Many more might easily be added; but these will be enough for a moderate-sized garden, and the proprietors of large gardens do not want a selection.

All these roses may be procured from Lane and Co., Berkhampstead; Rivers, Sawbridgeworth; or in London, from Lees, Hammersmith, or Hopgood, Bayswater. When wanted for a London garden they do best from a London nursery, as roses reared in the pure air of the country will never thrive in a smoky atmosphere.

ON THE CULTURE OF THE SCARLET VERBENA.

BY MR. FROST.

Verbena Melindres being one of the most beautiful plants for decorating a flower-garden, either in beds or borders, perhaps a few observations on it may be acceptable. I will, therefore, offer to your numerous readers, the treatment I have adopted here for the last eight years with great success. About the end of April, or beginning of May, I plant out Verbenas in clumps and borders, for the summer's show. I prepare the beds for the plants, by digging them up with a good coat of rotten leaves, and afterwards giving them a gentle treading, to make the soil a little firm; as I find by this treatment the plants do much better than when the soil is loose. Previous to the plants being planted out, they ought to be exposed to the air as much as possible to harden them; and if the nights should be frosty in May, protection is necessary. In July, I take off cuttings from the outside plants near the edgings, as that keeps them within bounds and tends to make the bed fill up in the centre, which gives it a better appearance. These cuttings will strike freely in sand, or fine sifted mould under a hand-glass, with or without bottom heat; the cuttings should be cut close to a joint and be about three inches long. Where a great quantity of plants are required, and there is but little room for storing by in winter, I would recommend the cuttings to be struck in cutting pots, commonly called wide-mouth thirty-twos, and to be kept in them till spring before they are potted off. Winter treatment must be strictly attended to, where the plants are kept in cold pits and frames; during mild weather, air should be given night and day, and water in the mornings on fine days, when the sun shines; and the lights should be left off till the afternoon; and in frosty weather, the plants must be well protected by coverings, and litter around the outside of the frames, to keep the frost from penetrating; but they should be always uncovered

when the sun shines, and the plants should never be watered unless they are very dry. I keep Geraniums, Verbenas, and all sorts of plants in cold pits and frames, and seldom, if ever, lose a plant, unless there should be a long continuance of severe weather, and then but very few. Cuttings strike freely in a little bottom heat in spring, and where they are wanted, a few plants should be placed in heat to excite their growth, for the purpose of taking cuttings from them. Small plants should always be planted on the outsides of the beds, in order to keep the bed more uniform. The above treatment will answer for all the species and varieties of Verbenas, as Melindres is the most delicate of them all.

Dropmore,
March 4th, 1841.

[Every one who has seen the dazzling effect of the Scarlet Verbenas in the splendid flower-garden at Dropmore, will be aware of the value of this paper, detailing Mr. Frost's method of treating them.]

ON THE CULTURE OF FUCHSIA STANDISHII.

BY MR. STANDISH.

This plant is a hybrid, between *Fuchsia fulgens* and *F. globosa*, forming an intermediate kind between the two. It requires to have a season of rest after it has done flowering, and to have the wood well ripened. In the early part of spring, this plant, if properly managed, grows very fast, and may be propagated equally so. In many places, however, I have seen it potted in stiff loam, and the mould pressed very tight down to its roots; consequently it has made but little growth, and the flowers have been small. I find this and many other Fuchsias delight in a light rich soil, composed of one half good rotten leaf-mould (that is, of leaves which have been used for linings to hotbeds, with a mixture of dung, and the whole afterwards properly decomposed), and one half light rich loam, with a mixture of sand. To have fine plants early in spring, they should be put into a moist heat, from 60 to 65 degrees; and when in a growing state, I frequently top them to make them bushy: but when they begin to flower, from their flowering so freely, they put forth no more shoots from the axils of the leaves, though the extreme ends will continue to grow and flower the whole summer; and if put in a stove in the autumn, they will still continue flowering throughout the winter. This plant does well turned out in the open border; and if protected with a few leaves, half-rotten dung, sawdust, or, in short, anything to keep the frost from

penetrating the ground, it will grow with great vigour in the spring. It also forms a beautiful object in the conservatory, when grown as a standard. To grow it in this manner, a young plant should be put in a stove, and kept in a moist heat; it should then be divested of all side shoots, and shifted as required. As it delights in a shady situation, to encourage its growth put it under the shade of vines, or anything to form a partial shade; where, if due attention be paid, it will make shoots from five to six feet long in one season. When of the desired height, the following spring, it can be topped and managed as before; and when in a flowering state, it can be removed to the conservatory, where, in course of time, it will become a magnificent plant.

BAGSHOT,
March 1*st*, 1841.

ON THE HISTORY AND CULTURE OF THE GREENHOUSE CINERARIAS.

BY THE EDITOR.

THE greenhouse Cinerarias, or Cape Asters, are very valuable from their coming into flower at a season when showy flowers are particularly desirable from their rarity. By a slight forcing, most kinds of Cinerarias may be made to flower in December; and if merely preserved from the frost during winter, they will flower freely in March. Most of the kinds are very handsome, and they are all well deserving of a place in every greenhouse, plant-cabinet, window, and balcony, from the brilliant colour and lively appearance of their flowers, and their great abundance and long duration.

Most of the purple Cinerarias are varieties, or hybrids, of *C. cruenta*, (see *fig.* 38,) which has bright purple flowers which are very fragrant, and leaves which appear stained with crimson on the under side; and hence the name, *cruenta* signifying blood. This species is a native of the Canary Isles, whence it was introduced in 1777. It was long a favourite in greenhouses, and was generally propagated by dividing the roots; but about 1827, (fifty years after its first introduction,) Mr. Drummond, curator of the Botanic Garden in Cork, having raised it from seed, and found the seedlings vary considerably, conceived the idea of hybridizing it with *C. lanata* (*fig.* 39 *a*);

Fig. 38.

CINERARIA CRUENTA.

C. geifolia (*b*); and (*c*) *C. amelloides* (*Agathœa cœlestis*, Cass.). These trials, however, do not appear to have succeeded with *C. geifolia,* which has yellow flowers, and *C. amelloides*, which has blue ones, both being natives of the Cape; but between *C. cruenta* and *C. lanata*, the flowers of which were of nearly the same colour, some handsome hybrids were raised. Since that time numerous experiments have been made, and hybrids have been raised from *C. cruenta*, *C. aurita* (a purple-flowered plant having a disagreeable smell, a native of Madeira), *C. Tussilaginis* (a handsome species from Teneriffe), and *C. populifolia*. *Cineraria Tussilaginis* has two synonymes; viz. *Senecio Tussilaginis*, under which name it was figured in the Bot. Reg. t. 1550, and *Pericallis Tussilaginis*, which it is called in Sweet's Brit. Flow. Gard., 2nd ser. t. 228.

Fig. 39.

CINERARIA LANATA, C. GEIFOLIA, AND C. AMELLOIDES.

Some of the most beautiful Cinerarias now in our greenhouses have been raised by Messrs. Henderson, Pine-apple Place; particularly *C. Hendersoni* and the King, both raised from seeds of *C. cruenta*. *C. Waterhousiana* was raised by Mr. Tate, gardener to John Waterhouse, Esq. of Well Head, near Halifax, from seed of *C. Tussilaginis*, fertilised by the pollen of *C. cruenta*. Two new ones have lately been raised, of remarkably clear and brilliant colours, apparently from *C. cruenta*, named Queen Victoria and Prince Albert, by Mr. Pierce, nurseryman, of Yeovil, Somersetshire.

The name Cineraria is derived from the Latin word for ashes, in allusion to the white mealy appearance of the leaves, either on the surface, as in *C. cruenta* and its varieties, which are crimson below, or below, when the upper surface is green, as in *C. lanata* and many other kinds. The greater part of this genus has, however, been incorporated in that of Senecio (from *senex*, an old man) by Lessing; and this alteration has been adopted by De Candolle, and some other modern botanists. Only six species, one of which is *C. geifolia*, have been left in the genus Cineraria.

When Cinerarias are raised from seed, care should be taken to obtain the seed from the largest and finest-coloured flowers. These must be watched every day lest they should be scattered by the wind; as it is

remarkable that the flowers of many of the kinds do not wither till the seeds are ripe. The seeds should be sown immediately in pots of light rich earth, and placed in a hotbed. As soon as the seedlings have opened their second pair of leaves, if they appear tolerably strong, they should be transplanted into the small pots called sixties. They should be again transplanted in a week or two, into rather larger pots; and again two or three times according to their growth, and to the size they are wished to attain —frequent shifting greatly increasing the size and bushiness of the plant. It must be observed, however, that if the plants appear very weak in the seed-bed, they may be suffered to attain their third, and, in some cases, even their fourth pair of leaves, before they are removed; and that when they are transplanted, it will do them injury instead of good, unless their roots appear on the outside of the ball of earth, when it is turned out of the pot. Cinerarias require a great deal of nourishment; and the soil in which they grow may be enriched with vegetable mould or rotten dung, and the plants watered with soap-suds, liquid manure, &c. If the flowers are wished to be particularly fine, when the plants have done flowering, which is generally about the end of May or June, they should be cut down, and the pots placed in a dry place, where they should be kept nearly without water till August; in the course of which month the roots should be divided, and the old plants re-potted. They must be kept in a cold pit or greenhouse, from which the frost is excluded, during winter; and if they are wanted to flower early, they should be plunged into a slight hotbed. While in a growing and flowering state, they should be freely and regularly watered; but the water should never be allowed to stand in the saucer. All the Cinerarias may be propagated by cuttings, which strike readily; and most of them, if kept too warm, or too moist at the root, are apt to be infested with a species of aphis, which makes the leaves curl up. The remedy is setting the plants in the open air, and frequently syringing them.

ON GOLD AND SILVER FISH.

BY THE EDITOR.

These beautiful kinds of fish are varieties of a kind of carp (*Cyprinus auratus*, Lin.) There are indeed so many different kinds belonging to this species, that M. de Sauvigny published a work in Paris in 1780, in which he gave coloured representations of eighty-nine varieties, of every different shade of gold, silver, orange, brown, and purple. They vary also in their tails, which are sometimes double, and sometimes triple;

and in their fins, which are much longer and larger in some varieties than in others.

The gold fish was first brought from China to the Cape of Good Hope by the Dutch, about 1611; and a few specimens were soon after purchased at an enormous price by the Portuguese, who appear to have first brought it to Europe. The Dutch continued for some time to sell their fish at exorbitant prices; but the fish breeding rapidly in Portugal, the Dutch soon lost their monopoly, and the Portuguese for many years supplied gold and silver fish to the rest of Europe. Even so late as the middle of the last century, gold fish were regularly imported from Portugal in large earthenware jars, like those now used for grapes. Gold fish are said to have been introduced into England in 1691; but the first account we have of their being kept at any particular place goes no farther back than 1728, when the Duke of Argyle had some at Whitton, near Isleworth. In France, the first seen are said to have been sent as a present to Mademoiselle de Pompadour, about 1730; when the French courtiers were so enchanted with the splendour of this new kind of fish, that they called it *La Dorade de la Chine*, a name it still retains throughout France. The French have, however, now so completely naturalised this fish in the Mauritius, that it is served at table with the other kinds of carp, which it greatly resembles in taste, though it has a more delicate flavour.

Though the gold fish is a native of a very hot part of China, and though it appears to enjoy the heat of a pine-stove or orchideous house in England, yet it possesses the power of resisting a great degree of cold. Some years since, Professor Host, a well-known naturalist in Vienna, chanced to leave a glass globe containing a gold fish in the window of a room without a fire, during one of the coldest nights of a very severe winter. In the morning he recollected his poor fish, and examining the glass, he found the water frozen apparently quite hard, and the fish fixed immovably in the centre. Supposing the fish to be dead, he left it in the ice; but as it was extremely beautiful, he took a friend to look at it in the course of the day, when, to his great surprise, he found that the water had thawed naturally, from the room becoming warm by the sun, and that the fish was quite lively, and swimming about as though nothing had happened. The friend of M. Host was so much struck with this remarkable occurrence, that he tried a similar experiment; but bringing his frozen fish to the stove to hasten its revival, the fish died.

Gold fish live a very long time. A few years since there were some in a large marble basin belonging to the Alcazar of Seville, which were known to have been there more than sixty years, and which are

probably still existing, as they then showed no signs of old age. They were indeed particularly active, though larger than usual, and of the most vivid colours. It was, however, remarkable that they were all of nearly the same size; and this is generally the case with all gold fish kept in clear water, as they never breed in such situations. It has also been remarked, that gold fish kept in glass seldom increase in size, particularly if the vase or globe in which they are kept be small. A curious experiment to ascertain the truth of this remark was tried some years ago in Paris. Two or three fishes a year old, which measured two inches long, were put into a glass globe exactly one foot in diameter. The water was changed every second day in summer, and every week in winter, as is usually done with gold fish kept in glass vessels, and they were occasionally fed with crumbs of bread; but in eleven years they had not increased one line in length. They were then taken out of the globe, and thrown into a pond in the garden, where there were no other gold fish; and when this pond was drained at the end of ten months, the gold fish were found to have increased in length, one about four inches, and the other nearly five.

It has been before remarked, that gold fish never breed in clear water; and it has been observed that when they do breed, the young conceal themselves among the roots of plants, in inequalities of banks, or among the faggots which may have been put in for them. A lady who happened to pull up an aquatic plant which had grown on the bank of a pond in which there were some gold fish, was quite astonished to find the roots appear alive; and on examining them, she discovered the movement to be occasioned by a great number of little dark-brown fishes which were sticking to the roots. These little fishes were the fry of the gold carp, which are taught by instinct to conceal themselves from the old fish till the golden hue begins to appear on their sides, which it does when they are about an inch long. It is said that the gold carp devour the fry of other fish, and also their own, if they see them before the golden blotches appear.

When it is wished to breed gold fish in clear water in a tank or basin, a few faggots should be thrown into the water; or a sloping bank of gravel should be raised in the tank, the upper part of which is near the surface of the water. This will afford at once a situation for the old fish to deposit their spawn, and a shelter for the young fry. Some persons, when the spawn has been deposited on a faggot, remove the wood to another tank to rear the young; but they always do better, and grow faster, when bred in a pond with an earthy bottom, and in which plants grow naturally.

In keeping gold fish in ponds, no care is requisite but that of sprinkling a few crumbs of bread occasionally on the surface of the water to feed them; but when they are kept in any small vessel, the water should be changed regularly, not only for the sake of cleanliness, but because the fish will have exhausted the water of the animalcula, which serve them as food. The usual rule is to change the water in glass globes or vases every second day in summer, and every week in winter.

REVIEWS.

The Botanical Magazine for March has not been received.

The Botanical Register for March contains—

Ipomœa ficifolia (t. 13). A very handsome half-shrubby new Ipomœa, with a tuberous root and rich purple flowers, which it produces in such abundance, that a plant "little more than twelve months old, produced nearly five hundred flowers upon a cylindrical wire trellis, two feet high." It is half-hardy, that is, it only requires protection during winter, and in summer would form a beautiful ornament in the open gardens. It is a native of Buenos Ayres, whence the seeds were obtained in 1839, by Messrs. Salter and Wheeler, of Bath, in whose nursery it was raised.

Salvia Regla (t. 14). A new Mexican Sage, with scarlet flowers, sent home last year by Mr. Hartweg. It flowers best planted in the free ground in a conservatory. In its native country, it is a shrub 4ft. or 5ft. high; the flowers are very handsome, but as only a few are produced at a time, the plant is not showy.

Cynoglossum glochidiatum (t. 15). An Indian species of Hound's-tongue, which is a hardy biennial in British gardens, if sown in a dry situation. The flowers are bright blue, and very pretty; but the plant itself is a tall straggling weed, only fit for a shrubbery, or some other situation where its "herbage may not offend the eye." The species takes its name from its bristly seeds.

Sprekelia glauca (t. 16). A Mexican plant, only differing from the old Jacobean Lily, in the flowers being smaller and paler, and the leaves glaucous.

Sobralia sessilis (t. 17). An orchideous plant from Peru. The species of this genus "resemble reeds loaded with large red or white, and

often fragrant flowers, which always grow from the extremity of the reed among the large plaited grassy leaves."

Brassia Lawrenceana (t. 18). A very beautiful species from Brazil, with large, bright yellow, sweet-scented flowers.

All these plants are new.

PAXTON'S MAGAZINE OF BOTANY contains—

Batatas bonariensis. This is a very beautiful drawing of a fine Ipomœa, which is now made one of the new genus Batatas, and which was before figured in Bot. Mag. t. 3665. There is a mistake respecting the year of its introduction, as it was first sent from Buenos Ayres in 1829, and not 1839.

Callistachys longifolia. A new and very handsome species of Callistachys from the Swan River, which flowered with Messrs. Rollison, at Tooting, and has the wings and peel reddish, and the standard yellow.

Hardenbergia Comptonia. A very handsome species, figured before in Bot. Reg. t. 298.

Portulacea Thellusonii. A very handsome half-hardy annual, already figured in the Bot. Reg. for 1840, t. 31.

Only one of these plants is new, viz. Callistachys longifolia.

THE BOTANIST contains—

Euthales macrophylla. No. 209. Already noticed as figured in Bot. Reg. t. 1, for the present year. (See p. 58.)

Paxtonia rosea. No. 210. A very handsome orchideous plant, before figured in Bot. Reg. for 1838, t. 60.

Lotus albidus. No. 211. An Australian species introduced in 1822, and figured in Lodd. Bot. Cab. t. 1063.

Hibiscus Telfairæ. No. 212. Raised at Bury Hill, in 1825, from seeds sent from the Mauritius by Mr. Telfair.

The Hibiscus is the only one of these plants that has not been figured before.

THE BOTANIC GARDEN contains—

Pentstemon barbatum, var. *Mexicanum.* No. 777. A very handsome variety of a well-known plant, formerly called *Chelone barbata.* The variety is much taller than the species; and it has larger flowers, which are brick-red, streaked inside, and with a yellow fringe. It was introduced in 1838, and has not been figured before.

Scutellaria Japonica. No. 778. This handsome species, though introduced in 1828, has never before been figured.

Ismelia Maderensis. No. 779. A perennial with yellow flowers, a native of Madeira, before figured in Sweet's Brit. Flow. Gard. 2d. ser. t. 342.

Erica Mackayana. No. 780. This pretty heath, which is generally supposed to be a variety of E. tetralix, though introduced in 1834, has not been figured before.

Three of these plants are now figured for the first time.

A Natural History of British and Foreign Quadrupeds, containing many Modern Discoveries, Original Observations, and numerous Anecdotes. By James H. Fennel. With two hundred Woodcuts.

This is a very entertaining work, as the author has evidently spared no pains to collect all the information extant on the subject of which he treats. He must indeed have turned over many hundreds of volumes to cull the honey with which he has enriched his hive. The anecdotes of the different animals are very numerous and well selected; and in short, as was said of Goldsmith, Mr. Fennel has made zoology as entertaining as a fairy tale.

As an example of the general style of the work, and of the agreeable manner in which the anecdotes are related, we shall quote

THE HISTORY OF MOUSTACHE.

"Among all the biographies of poodles, none will be found more interesting than that of Moustache, who was born at Falaise in Normandy, in 1799. At the tender age of six months he was disposed of to an eminent grocer at Caen, who treated him in the kindest manner; but, strolling about the town one day, not long after his arrival, Moustache happened to come upon the parade of a company of grenadiers. They were brilliantly equipped, their spirits high, and their drums loud. Moustache, instantly smitten with their fine appearance and military enthusiasm, cut the grocer for ever, slunk out of the town, and joined the grenadiers ere they had marched an hour. He was dirty; he was tolerably ugly; but there was an intelligence, a sparkle, a brightness about his eye that could not be overlooked. 'We have not a single dog in the regiment,' said the *petit tambour*, 'and, at any rate, this one looks clever enough to forage for himself.' The drum-major nodded assent; and Moustache attached himself to the band, and was soon found to possess considerable tact and talent. He already fetched and carried admirably, and ere three weeks were over, he could stand with as erect a back as any private in the regiment, act sentinel, and keep time in the march. Soldier-like, he lived from paw to mouth. He endured the

fatigues of Mont St. Bernard with as good a grace as any veteran in the army. They were soon near the enemy, and Moustache, having become familiar with the sound of musketry as well as of drums, seemed to be inspired with new ardour as he approached the scene of action. The first occasion on which he distinguished himself was this:—His regiment being encamped on the heights above Alexandria, a detachment of Austrians, from the vale of Belbo, attempted a surprise during the night. The weather was stormy, and the French had no notion that the Austrians were close advancing. The camp was in danger, but Moustache was on the alert. Walking his rounds as usual, with his nose in the air, he soon detected the greasy Germans, perhaps by the smell escaping from their knapsacks, full of saurkraut and rancid cheese. He gave the alarm, and the foul feeders 'fled for safety and for succour.' Next morning it was resolved that Moustache should thenceforth receive the ration of a grenadier *per diem*. He was now cropped *à-la-militaire*, a collar with the name of the regiment was hung round his neck, and the barber was ordered to come and shave him once a week.

"In a skirmish which occurred, Moustache received a bayonet-wound in his left shoulder. He was not perfectly recovered from this accident, when the great battle of Marengo took place. Lame as he was, he could not keep away from so grand a scene. He kept close to that banner he had learned to recognise among a hundred, and never gave over barking till the evening closed upon the combatants. The sun of Austerlitz found him with his chasseurs. In the heat of the action he perceived the ensign, who bore the colours of his regiment, surrounded by a detachment of the enemy. He flew to his rescue, barked with all his might, did all he could; but in vain—the ensign fell, covered with a hundred wounds, but not before, feeling himself about to fall, he had wrapped his body in the folds of the standard. Five or six Austrians still remained by the ensign to obtain possession of the colours he had so nobly defended. Moustache, having thrown himself on the dead body, was on the point of being pierced with half-a-dozen bayonets, when a timely discharge of grape-shot swept the Austrians into oblivion. The moment that Moustache perceived he was delivered from his assailants, he took the staff of the French banner in his teeth, and strenuously endeavoured to disengage it, but ineffectually. He succeeded, however, in tearing away the silk, and with this glorious trophy returned to the camp limping and bleeding.

"One day, a chasseur, mistaking the dog, hit him a chance-blow with the flat side of his sabre. Moustache, piqued to the heart, deserted from the regiment, attached himself to some dragoons, and followed them into Spain. On the 11th of March, 1811, he was killed by a cannon-ball

at the taking of Badajoz. He was buried on the scene of his last glories, collar, medal, and all. A plain stone, with the simple inscription '*Ci-gît le brave Moustache*,' was placed over his grave; but the Spaniards afterwards broke the stone, and the bones of the poor animal were burned by order of the Inquisition."

MISCELLANEOUS INTELLIGENCE.

THE ORNITHOLOGICAL SOCIETY IN ST. JAMES'S PARK.

This interesting society is advancing rapidly in public estimation. Several aquatic birds are, however, still wanting to complete the collection, and the following list of desiderata has been sent to us for insertion, through Captain Mangles, from the Secretary, Mr. Holl.

SWANS.

Hooper.
Bewick's.
Black.
Trumpeter.

GEESE.

Grey-lag.
Red-breasted.
Spur-winged.
Hutchins'.
Cereopsis.

DUCKS.

Eider.
Gadwall.
Ruddy.
Bimaculated.
King.
Western.
Velvet.
Scoter.
Surf Scoter.
Red-crested.
Cutaneous, or White-eyed.
Scaup.
Harlequin.
Long-tailed.
Summer.
Shoveller.
Red-billed Whistling.
Black-billed ditto.
Buffel-headed.
Canvas-back.
Dusky.
Pied.
Mandarin Teal.
Japanese Teal.

DIVERS.

Great Northern.
Black-throated.
Red-throated.

GREEBES.

Crested Greebe.
Eared.
Red-necked.
Little.
Carolina, or Pied-bill.
Horned.
Goosander.
Red-breasted Merganser.
Hooded Merganser.
Smew.

RETROSPECTIVE CRITICISM.

PERSIAN CYCLAMEN.

In the answer to your correspondent H. B., you recommend keeping the bulbs quite dry during winter. Now, I have been a grower of Persian Cyclamens for many years, and have had some hundreds of pots in flower at one time, and I am no friend to the drying system. I would not of course give my plants as much water in winter as in summer, but I would never let them become quite dry. Another thing

that you say, I do not approve of. You advise the bulb not to be covered with soil. Now the cyclamen has a very large bulb, and very small fibres (see *fig.* 40) ; and if the bulb is not covered with earth, it will not get moisture enough.

You are right in saying that the seedlings should not be transplanted till they are a year old; as, if moved before the first winter, they are sure to rot. The way I manage my seedlings is this:—I put a few of my best plants into the stove in February; and as soon as they show their blossoms, I restore them by degrees to their old quarters in the greenhouse. I then select the finest and most fragrant, (for they are not all fragrant alike,) and save their seeds, giving the plants plenty of air while the seeds are ripening. I sow the seed as soon as gathered in pans, which I set in the greenhouse; and I do not disturb the plants at all till the following May, when the bulbs will be about as large as a hazel-nut. I have a bed prepared of fine mould, the surface of which I cover two inches deep with a compost of sifted loam, leaf-mould or rotten dung, sharp white sand, and peat. In this I plant the bulbs six inches apart and cover them with hand-glasses, which I keep close at night, but take off in the middle of the day. In July, the hand-glasses may be left off altogether, till the first week in September. When the greenhouse plants are taken in, the Cyclamens should be potted in small pots—sixties for the small bulbs, and forty-eights for the larger ones; and in these pots they should flower. There cannot be a greater mistake than potting Cyclamens in large pots, or in having more than one in a pot. I have had sixty-five blossoms expanded at one time on a two-year-old bulb in a 48-pot.

Fig. 40.

PERSIAN CYCLAMEN.

An Amateur Florist.

Mortlake,
March 6th, 1841.

ERRATUM.

In the list of plants in Maund's Botanic Garden, p. 86, for *Ledum* read *Sedum*.

QUERIES AND ANSWERS.

DOUBLE DAISIES.

In answer to the query of an invalid lady, in your first No. (p. 30), as to the best method of producing double flowers, you pass over the daisy saying, "It is not necessary" to render it double. I was much disappointed at finding this brief notice, and shall be glad to know your reasons for treating it so briefly; as that is one, among many wild flowers, I particularly wish to render double; and as amusement is my chief object in gardening, it would be a source of interest to watch the progress made from year to year, even if the process were tedious.

I am even ambitious of producing the old-fashioned curiosity called the *hen and chickens* daisy, which proceeds from one already double I believe, and I should very much like to know how that is brought about.

London,
February 11*th*, 1841.

My reason for saying, in p. 30, that daisies did not require to be rendered double was, that as the daisy, in its natural state, consists of a great number of florets, it might, in a popular sense, be considered double naturally. In attempting to make the daisy truly double, we must remember that every division in the white part or ray is, in fact, a little flower, with its corolla, stamens, and pistil, all as perfect as in the peony, or any large single flower; the yellow part or disk is also composed of more than a hundred little florets, each, in the same way, perfect in itself; so that what is commonly called a flower of the daisy is, properly speaking, a head of flowers, each of which possesses the power of becoming double, when properly treated. When a flower becomes double, it is generally from the stamens and pistils turning into flower leaves or petals; and hence double flowers seldom produce much seed. The usual way of making plants produce more petals than seeds, is to supply them with a deep, rich, moist soil, into which the roots may penetrate to a considerable depth; as it is found from experience, that the nearer the roots of any plant are to the surface of the soil, the more likely the plant is to have few leaves in proportion to its fruits or seeds; and that the deeper the roots go, the more likely it is, to have more leaves and flowers than seeds.

The common double daisy sometimes is as large as half-a-crown, but only the florets of the ray become double, and those of the disk are smaller and much fewer than in the daisy in the single state. In the hen and

chickens daisy, the florets of the ray not only become double, but the footstalks of the outer ones become so elongated, that they stand out round the centre like a number of separate flower-heads. The coxcomb daisy is another kind, in which the receptacle is raised and lengthened into a ridge-like form, producing clusters of ray florets on each side, and a few small disk flowers along the apex of the ridge. All these kinds frequently appear accidentally in daisy edgings, without any pains being taken with them; but the most likely way to produce them, appears to be giving the plants a deep rich soil, and watering them frequently and freely.

FLOWERS FOR A GEOMETRICAL FLOWER-GARDEN.

Seeing in your valuable Magazine that you admit of queries, I am desirous of gaining a little information as to planting a geometrical flower-garden with the *gayest* and *brightest* colours, that will peg down well, and last in flower during the season: the garden consists of eight beds, is on turf, and in front of a small greenhouse. Should you think it worth troubling yourself to notice this, by giving any instructions in your next number, you will greatly oblige an admirer and constant reader of many of your beautiful works. From

A Lover of Gardening.

Kent,
March 13*th*, 1841.

P.S. Any hints that may improve the appearance of "*small flower-gardens*," would be deemed most acceptable.

The following plants have flowers of brilliant colours, which they will continue producing from May to September, or October if the weather is mild; but they are all killed by frost. They should therefore be raised from cuttings made in autumn, and kept in a frame, or in any situation protected from frost during winter; or they may be raised from seeds sown on a hotbed in February; in both cases they should be planted out in April or May. If planted early in April, they should be protected by hand-glasses or mats if the nights should be cold, as a frosty night, followed by a sunny day, would kill them. The soil should be any common garden mould not manured; the beds should be forked over, and then "firmed," as the gardeners call it, by slightly treading or rolling. The plants should be turned out of their pots, and the earth shaken from their roots, which should be carefully spread out, and have any broken parts cut off with a sharp knife, before they are covered with the mould, which should be very lightly pressed down. The plants should be watered and shaded for a few days, till they have established themselves, and as they grow they should be pegged down with little bits of forked sticks; and

any unmanageable shoots should be cut off, as close to the ground as possible, in order that the shoots which the plant may send out to replace them, may be so near the ground as to be easily trained. When the plants have done flowering they should be taken up, and their roots cut in; after which they may be put into pots, three or four in each, and set aside in a cool frame, that is, a frame without fire heat, or in any place where they can be kept from the frost, till the time for planting out returns in spring. They will require very little light during winter, and no more water than is absolutely necessary to prevent the roots from withering. Many gardeners take cuttings in July and August from the edges of the beds, and keep these for planting out in spring, throwing the old plants away as soon as they have done flowering. No manure should be put on the beds, as if the soil be too rich the plants will produce more leaves and stems than flowers. The following plants will suit a geometrical garden of eight beds.

1. *Verbena Melindres* (or *Chamædrifolia*) *latifolia*. This variety is much hardier than the species, and the flowers are of an equally brilliant scarlet.
2. *Petunia nyctaginiflora*, the common white *Petunia*, or *Petunia erubescens*, French white, with a dark eye.
3. *Crucinella stylosa*, pink.
4. *Anagallis Monelli*, the Italian *Pimpernel*, dark blue.
5. *Verbena pulchella*, white, or *Verbena Tweediana*, crimson; according to which colour may be preferred.
6. *Petunia superba*, rich dark purple.
7. *Erysimum Petrofskianum*, bright orange flowers. This plant, though at first thought an annual, proves to be a perennial.
8. *Anagallis grandiflora*, red.

Should there be any difficulty in getting *Crucinella stylosa*, heartseases may be substituted, and if this is the case, they should also be planted in bed 7; or dwarf scarlet geraniums may be planted in No. 3, and *Calceolarias* in No. 7. If it is wished to have a spring show as well as a summer one, the following annuals may be sown in autumn, and the beds covered with matting in severe weather, or in February or the first week in March, without protection.

1. *Nemophila insignis*, bright blue, quite hardy.
2. *Lathenia californica* or *glabrata*, bright yellow, quite hardy.
3. *Phlox Drummondi*, rather tender, or *Malope grandiflora*, quite hardy; both red.
4. *Gilia tricolor*, white, black and purple, quite hardy; or the more tender *Clintonia pulchella*, blue and white, or *Kaulfussia amelloides*, blue and yellow.
5. *Escholtzia californica* or *crocea*, yellow or orange; quite hardy.
6. *Eutoca viscida*, dark blue, or *E. Wrangeliana*, pale blue; both quite hardy.
7. *Platystemon californica*, cream-colour, quite hardy.
8. *Sanvitalia procumbens*, yellow and brown; or *Cladanthus arabicus*, or *Anthemis arabica*, yellow; quite hardy.

All these flower freely, and are of bright colours; but they should be cleared off before the greenhouse plants are put into the beds: the planting of the latter, in this case, being delayed till the end of May.

The other queries I have received, shall be answered in my next number.

VISITS TO THE NURSERY AND PRIVATE GARDENS.

Lee's Nursery, Hammersmith, March 15.—Among the plants in flower was a specimen of *Erica hyemalis*, which I was assured had continued producing a succession of flowers since last July. Some plants of *E. Archerii* and *E. Sebana*, also continued in flower, and numerous others were covered with blossom-buds. A few Chrysanthemums were still in flower, and among others, the King, *C. striatum*, and *C. grandis*, which was the more remarkable from the latter being one of the early flowering kinds. *Amaryllis miniata*, a very showy plant, was beautifully in flower. In the orchideous house was a remarkably healthy plant of the common scarlet geranium, which had been put in as an experiment to try how it would bear the heat. The Camellias were only partially in flower, as they have not been forced. The season is not yet sufficiently advanced for seeing this nursery to the greatest advantage; as it is celebrated for its roses, and other flowering plants in the open air, which are not in their full beauty till May and June.

Mr. Penn's Garden, Lewisham, March 13.—This was the first time I ever visited any hothouses heated on Mr. Penn's principle, and I was certainly much gratified, as I think I never saw flowers more brilliant in colour than those in Mr. Penn's stoves. *Passiflora racemosa*, and *Abutilon striatum*, were particularly beautiful; the latter having a greater profusion of flowers, and much larger leaves than any other specimen I have seen. Some of the plants were superb; particularly *Æschynanthus grandiflorus*, *Bilbergia iridifolia*, *Dendrobium Pierardi* and *Gongora atro-purpurea*, the latter having four or five spikes of flowers. I did not, however, find the atmosphere so agreeable as I expected; and indeed it did not appear to me different from that of other stoves.

HORTICULTURAL SOCIETY.

Tuesday, February 16.—In a communication from Sir Charles Lemon, it was stated that a quantity of cuttings of the Nepal Tree-Rhododendron some bearing unripe capsules and others flower-buds, having been kept in moist mud in a stove, the capsules had swollen and the flowers expanded; and the cuttings had formed shoots of about five inches long.

A paper was read detailing some very interesting experiments performed at the Society's Gardens, to try the effect of Kyanized wood on growing plants. Two boxes, one of Kyanized wood, the other not, were filled

with the same soil, and twelve plants of different species put into each; at the end of six months there was no difference in their appearance, the plants in the one box looking quite as well as those in the other. A quantity of Calendrinias and Pelargoniums were afterwards planted in a box of Kyanized wood, and at the end of three months exhibited no ill effects; from which it appears that Kyanized wood exercises no injurious effects on vegetation while growing in a cold dry atmosphere. Some plants were then selected capable of enduring a high temperature: here the effect was very different, the leaves which came in contact with the wood quickly withered, and a sensitive plant was killed; those plants which were not dead were then removed, and placed in another box not Kyanized, with similar soil, when they very soon recovered.

The only interesting plants exhibited were two very fine specimens of *Phaius Tankervellia*, from Mrs. Lawrence, each bearing fourteen spikes of flowers: there were also a fine *Camellia Donkellœrii*, *Azalea Phœnecia*, *Cœlogyne cristata*, (so named from a tuft of yellow hairs in the centre of the flowers), a good specimen of *Cyrtochilum maculatum*, (a Mexican plant, not requiring a very high temperature; the house in which it was grown having been as low as forty-two degrees,) a new species of *Columnea* from Mexico, something like *C. scandens*; a seedling *Epacris*; and from Mr. Mills a brace of fine cucumbers, grown according to the method recommended in his Treatise.

March 2.—The results were detailed of several very curious experiments which have lately been tried by Dr. Lindley on hyacinths, some of which were grown in charcoal, and some in pure white sand, and which were watered with solutions of different kinds of salts, most of which proved highly injurious to the plants. A paper was read on a philosophical mode of preventing the ravages of snails, by surrounding the pot containing the plant to be protected with a strip of zinc, surmounted by a rim of copper, which curves over, from the plant: this forms a miniature galvanic battery for the poor snails and slugs; as the moisture exuded from their bodies, and without which they cannot crawl, serves instead of water; and thus the snail, if it suffers its tentacula to touch the copper while its body is on the zinc, sustains a galvanic shock, and is effectually deterred from proceeding any further.

Among the plants exhibited were a magnificent specimen of *Oncidium altissimum*, with flower-stems from thirteen to fourteen feet long, which gained a silver Knightian medal, and, with *Epacris impressa* and *Erica carinata*, was sent by Mrs. Lawrence. Messrs. Veitch and Son, of Exeter, exhibited a small plant of *Lechenaultia biloba*, one of the blue species, from Swan River, the first which has yet flowered in this country, and to

it was awarded a large silver medal. Mr. Edmonds, gardener to His Grace the Duke of Devonshire, at Chiswick, sent plants of *Trichopilia tortilis*, *Hakea pugioniformis*, and *Polystachya reflexa*, a new species with small pink flowers, differing in form from any yet known. *Boronia ledifolia*, a rare species with bright pink star-like flowers, and *Mirbelia floribunda*, loaded with bright violet-coloured blossoms, were sent by Messrs. Loddiges; the latter being exhibited for the first time in this country, a large silver medal was awarded to it.

Among the fruit, Sir T. D. Acland exhibited some good specimens of the Cornish Gilliflower Apple, a rich high-flavoured fruit, but too little known. Mrs. G. Dowdeswell produced some fruit of the *Physalis edulis*, or Cape Gooseberry, raised in the open air against a south-west wall, in Worcestershire; and Mrs. Harwood exhibited two handsome lemons grown on a tree, the stem of which was only one inch in diameter, and which bore twenty more fruit.

March 16.—The room was excessively crowded and oppressively hot. Among the plants were *Doryanthes excelsa*, which had flowered at the height of six feet, and which was very inferior in beauty to the descriptions given of it; *Acacia vestita*, a very beautiful, drooping-branched Acacia; *Pimelea spectabilis; Acacia myrtifolia; Erica aristata;* and *Epacris onosmæfolia.* There were some beautiful specimens of Camellias, from Mrs. Lawrence, and a tray of forced roses from Messrs. Lane and Sons, of Berkhampstead. Several of these roses were very beautiful; particularly one with very rich dark crimson flowers, which is not yet named. The tea-scented roses were as fragrant as though grown in the open air.

FLORAL CALENDAR.

APRIL.

This is a very busy month for gardeners; and, indeed, nature now proceeds with such rapidity that it is very difficult to keep pace with her. The seeds of hardy annual flowers are generally sown in this month in town gardens; turf is laid down where required; lawns are rolled; box edgings are cut, and if necessary taken up and replanted; and roses are grafted or planted. Some of these operations belong properly to March, but they may all be safely performed in the first fortnight of February.

The annuals which succeed best in town gardens are the following:— Large or tall kinds:—*Malope trifida grandiflora*, dark crimson; *Goodetia rubicunda*, rose coloured; and *G. Lindleyana*, pink and white; *Chry-*

santhemum tricolor, and *C. coronaria*; Love-lies-bleeding, and Prince's feather; *Gilia capitata*, blue; *Eutoca viscida*, dark blue; several kinds of *Centaurea*, or Corn blue-bottle, Convolvulus, Sweet peas, and Lupines. All these annuals are quite hardy, and only require sowing in the open ground in April to flower freely in June and July. The following are also quite hardy; but as they are longer in coming to perfection they do better sown in autumn, as soon as the seed is ripe, or in February—when sown in April, they rarely flower before August or September. These plants are all either tall or bushy, and take a good deal of room: they are *Erysimum Petrofskianum*, with bright orange flowers; *Collinsia bicolor*, purple and white; *Coreopsis tinctoria* (also called *Calliopsis bicolor*), yellow and brown, several varieties; the Rocket Larkspur; *Eschscholtzia californica*, yellow, and *E. crocea*, orange; *Iberis umbellata*, the common Candy-tuft, purple, and *I. coronaria*, the Rocket Candy-tuft, white; *Calendula hybrida*, and *C. pluvialis*, the Cape Marigolds, whitish; and *Sphenogyne speciosa*, buff.

For the dwarf plants, the best for a small garden are Mignionette; *Lupinus nanus*, bright blue; *Gilia tricolor; Nemophila insignis*, bright blue; *Limnanthus Douglasi*, yellow and white; *Calandrinia speciosa*, dark crimson; *Eutoca multiflora*, and *E. Wrangeliana*, both pale purple; *Leptosiphon densiflorus*, and *L. Androsace*, purplish; *Gilia achillæfolia*, purple; *Lasthenia californica*, and *L. glabrata*, bright yellow; *Lychnis læta*, pink; *Nolana atriplicifolia*, blue, and *Platystemon californica*, cream colour. All these are quite hardy, and will flower in six weeks after sowing.

The seeds may be purchased at any of the seed-shops, or nurseries; but for a town or suburban garden, I prefer Lee's, Hammersmith. The reason is, that the plants which produce the seeds are grown in the nursery, which is a poor cold soil, and surrounded by houses; and the seeds of flowers thus reared are much more likely to thrive in the confined air of London or suburban gardens, than those of plants produced in the fine clear air of the country. The same may be said of roses and other plants; I never could keep roses above a year or two, however fine and healthy the plants might appear at first, when I procured them from the country; but those which I have had from Lee's and Hopgood's grow beautifully.

When flower seeds are to be sown, the ground should be slightly stirred with a fork, hoe, or spade, and then raked. The spots to be sown should then either be made firm with the back of a spade, or with the saucer of a flower-pot, and the seed should be scattered very thinly; a little earth should be then spread over them, and if the weather be dry the earth should be slightly sprinkled with water from the hand.

Agapetes serpens

Day & Haghe, Lith.rs to the Queen

AGAPETES, *D. Don.* THE AGAPETES.

Nat. Ord. Ericaceæ. *Lin. Syst.* Decandria Monogynia.

Generic Character.—Limb of calyx 5-cleft. Corolla tubular. Limb 5-cleft. Stamens 10. Filaments very short, flattened. Anthers mutic, very long, furnished at the base with a short thick appendage, exserted, emarginate at the apex. Cells of anthers confluent, filiform, glabrous. Stigma clavate. Ovarium 5-celled. Berry 5-celled, many-seeded. Seeds angular.—(*G. Don.*)

AGAPETES SETIGERA, *D. Don.* THE BRISTLY AGAPETES.

Synonyme.—Thibaudia setigera, *Royle.*

Engravings.—Royle, Illust. of the Bot. of the Himalaya mountains, t. 63 a, or 79 ; and our Plate 5.

Specific Character.—Leaves scattered, lanceolate, petiolate, acuminated, obtuse at the base. Flowers disposed in racemose corymbs. Peduncles and calyxes hispid. Filaments bearded. Anthers bifid. Segments of corolla ovate-oblong.—(*G. Don.*)

Description, &c.—A very handsome half-hardy evergreen shrub, a native of the Himalayas. The leaves are leathery, something like those of the Camellia, and the flowers are produced in great abundance. It should be grown in a light soil ; for example, a mixture of peat and sand; and it is propagated by cuttings of the ripened wood. It was introduced in 1838.

ON THE PRINCIPLES OF WINDOW GARDENING.

BY MR. FORTUNE, OF THE HOTHOUSE DEPARTMENT OF THE LONDON HORTICULTURAL SOCIETY.

There are no plants which are looked upon with more interest, or attended to with more care, than those which are cultivated in the rooms of dwelling-houses; and yet from our fair window gardeners imagining that there is something very difficult in the management of these plants, or from not properly understanding what that should be, they often fail in accomplishing what their labours and anxiety most richly merit. Now there is in reality no great secret in the treatment of window plants, and we may learn this if we will only open our eyes to what is continually going on in the great garden of nature by which we are surrounded. Wherever plants are placed, whether in the open air where they are watered by the dew and the gentle rain ; in the conservatory or greenhouse where they are subjected to more artificial treatment ; or in the dwelling-house window where the treatment must necessarily be still

more artificial, there are certain laws which regulate their growth, and certain conditions requisite in order to keep them in a high state of health and beauty. Thus, the greater part of greenhouse plants which are sufficiently hardy to endure the open air in the summer months, if planted in a sheltered border, attain in a short time twice their original size. This is no doubt owing in a great measure to the roots not being confined as they are in pots, but multiplying and ramifying in all directions in search of food, sending that food upwards into the stem, branches, and leaves, and so causing these parts to increase in size with great rapidity. This, then, is nature's method of cultivation, and the nearer we follow her example when we can, the more likely we are to succeed. Similar remarks apply to light and also to water, because both of these have much to do in the difference of the growth of the plants just mentioned.

But plants indigenous to warmer countries will not live out of doors during winter in England, and therefore we are obliged to have recourse to some artificial mode of protection, and of course that is the best mode in which we approach most nearly to natural circumstances. Hence the use of the Conservatory where many of the plants are planted in the border, and where all receive as much light as an artificial structure can admit. We can never therefore expect to grow plants so well in rooms as in buildings of this description, particularly in the winter months when the windows cannot be opened, or the plants with safety placed for any length of time on the outside. It must, therefore, be a general principle in their cultivation, to give them all the light possible in winter by placing them close to the window; and in the summer months in a sheltered situation out of doors. Although this situation is the best place for these plants in summer, yet in some places this may not be convenient, and in others it may be desirable to have them on the outside of the window or on a balcony erected there for that purpose, where they will grow and flower under the eye, and, if sweet-scented, perfume the air of the room when the window is opened on a fine summer evening. In this case it is necessary to have some means of protection from the burning heat of the mid-day sun, which is very much increased by the reflection of the rays from the wall of the house. It should never be forgotten that the management all along has been very artificial, the leaves and shoots have been formed in a dark room, the roots are confined to pots and cannot find nourishment so quickly as it is drawn from the leaves, and therefore if we have deprived the plant by artificial means of providing a certain quantity of food, we must also take care to counteract the other force—the sun upon the leaves—which if not done, more moisture will be drawn off than the roots can supply, and the result of this treatment will be, as

is very often seen, plants with bare stems and withered leaves. Having mentioned what should be done, every one will readily invent something to answer the purpose, an awning for example, or merely to move the plants to the inside of the window. Of course these remarks apply only to the summer season, when the sun's rays are very hot in the middle of the day, and to windows with a south aspect.

High winds are very injurious to window plants and should be guarded against, and for this reason windows on the ground or second floor are best adapted for their cultivation.

Having explained how these plants should be treated with regard to light and situation, I will now do the same thing with respect to water. As I said before, plants planted by the hand of nature, send their roots in all directions in search of food and moisture. They differ materially in this respect from those grown in greenhouses, or rooms; confined to the pots in which they grow, and supplied with water by artificial means. The latter are more liable to suffer than the former from dryness in summer, having fewer mouths to absorb the moisture which is rapidly evaporating from the leaves; and they are also more likely to be injured by excess of wet in winter, owing to the drainage of the pots getting choked. It is impossible to say how often, and how much, water should be given, because this depends upon the kind of plant, the state of health in which it is, and the season of the year. As a general rule, however, they should never be watered until the soil at the surface of the pot will readily crumble between the finger and thumb when taken up, and when in this state, as much water should be given as the soil will receive; in other words, never water until the plants are dry, and when you do water give plenty of it. Rain water is by far the best kind, and should always be used in preference to that obtained from springs. In winter very little water is required, and it should always be cautiously given, because the air is more moist, and the light is not so intense, therefore there is less demand made upon the roots by the leaves.

It is always necessary when the plants are in the inside of the room, to have some contrivance to prevent the water from running through the soil and wetting the floor, and this is most simply done by placing a flat pan below the flower-pot, which collects any superfluous water, and this water is afterwards absorbed by the roots when the soil gets dry. The method very often practised, of always keeping these pans full of water in preference to watering from the top, is not to be recommended, except for very robust plants which are not easily injured, and not even for these in the winter months. Watering over the leaves is of the utmost importance to the health of window plants, exposed as they are to so many small

particles of dust, which forms a thin crust over them, and prevents the natural action of their pores. This operation can be performed very seldom in winter, but should be done every day in summer by the lady who is anxious to preserve her plants in health and beauty. Your correspondent, Mrs. Glover, who seems to be a very successful room cultivator of plants, ascribes much of her success to attention to this, which may be called a natural operation. And now, when we have such beautiful syringes for this purpose, it is a pleasant occupation for a lady to place one in a watering pot, and send a fine shower over her plants on a summer afternoon after the sun has gone off them.

The proper time for shifting and potting plants of this description is either in spring or early in autumn, but as different plants require different soils and peculiar modes of treatment, before I can say anything upon this subject, I must first mention the plants themselves. What I have now written may be regarded as general principles which apply to all; what I intend to write at some future time, is a list of the plants best suited for such situations, dividing them into classes, and then giving the soils, methods of propagation, and the peculiar treatment which each requires.

CONTINENTAL WILD-FLOWERS.

BY MRS. ATHERSTONE.

We left Venice for Constance, where we intended to winter. On arriving at Linden we were informed the steam-boat would not come up for some days, we therefore hired a coach to take us to Limburg, in order to cross the lake. We went through several miles of forest (or rather, part of the Black Forest) belonging to the King of Wirtemberg, who has a fine castle situated on the lake, which the driver called Frederick Hausen, and where he said the king came to hunt. The road was exceedingly heavy, and when the man descended to ease his horses, I got out of the coach at the same time in order to look for wild plants. Across a deep ditch of yellow sand and clay I beheld one, which appeared to me uncommon. I scrambled over with some difficulty, and beheld what I may call the winter Anemone (*Anemone Pulsatilla*), this being on the 15th of November. The plants were so deep in the sand that I could hardly get them out of their yellow bed; they were covered with a fine long silky down, I suppose to protect them from the cold, and the flowers were of a reddish-purple, with the anthers of a bright yellow. The flower-stems were very short and thick. There were not many, and though I looked

all along the forest I saw them no more. They certainly were only then coming into flower, as there were only three in bloom. The green leaves were not up, nor appearing, for I pulled up the whole plant.

I may add that I also got a few flowers of the blue *Hepatica*. By the *Inn*, at Innspruck, I found a splendid dwarf toad-flax (*Linaria reflex*), with a lovely purple and rich yellow flower, the stalks and leaves of a pale green, rather bluish, and very much serrated. The seed of this plant, which I sowed on my return to Twizel House, came up beautifully; it is now sowing itself sparingly, and does not degenerate.

I also found another toad-flax, the flowers of which were bright purple and orange (*Linaria speciosa*). The plant was above a foot high on the Dent de Vaulion—3065 feet above the level of the sea—I mean at the Lac de Joux. Nothing could be more splendid than this plant growing out of the crevice of a rock and waving gracefully, the sun shining upon it. I got it carefully up and set it in a little garden at Vevay, where I collected the seed and sent it to Twizel. It now sows itself all over the garden, but degenerates into every shade; only now and then a fine deep purple and orange eye comes up, and we try always to have them, by weeding away the light ones.

I found another toad-flax at Montmorency, bright yellow and rich brown, running along the ground six or eight inches:—leaves roundish; and the leaves and flowers placed alternately. This was a very uncommon plant, as I never saw it but there, and once on the banks of the Cher, where it grew near the Gypsum rocks.

March 21, 1841.

WATERING-POT FOR LADIES,

BY MR. BEATON, GARDENER TO SIR WILLIAM MIDDLETON, SHRUBLAND PARK, NEAR IPSWICH.

One of the most teasing things that a lady can meet with in the cultivation of her plants, is a badly-made watering-pot, at least such is my own experience. To be sure, my blue apron is not much the worse for a daily sprinkling of water from leaky pots or spouts, and I seldom use gloves when I am watering; but ladies, whose clothes are not suited to resist wet, must be sadly annoyed when at the delightful exercise of watering their own favourite flowers, if their watering-pots let off a single drop of water except by the spout or rose. Indeed, even watering with an open-spout pot is not fit work for ladies; and as they should always

use the rose, the danger of leakage is increased in their case when there is any sediment in the water, as it soon fills up the small holes in the rose, and in order to get this cleared from time to time, the rose is made to come off. After a little use the water finds a way of escaping at the junction between the detached rose and the spout of the watering-pot, and a stream of water is sure to descend on the shoes; or, if the plants should be on a high shelf, down the sleeves, or over the clothes. I have made a slight improvement on watering-pots to do away with these annoyances; and, I dare say, it will be useful to many lady gardeners. It is to have the rose fixed, instead of coming off in the usual way, and to have a *moveable* square piece of tin inside the watering-pot to cover the hole at the bottom of the spout, or where it enters the pot. This piece of tin must be pierced with small holes, the same size as those in the rose, and this will so far filter the water that nothing can reach the rose, but what can pass through it. When the piece of tin becomes choked up, it may be taken out to be cleared; and when in use it is kept in its place by two strips of the same material, soldered to the side of the watering-pots. Any tinsmith can add this strainer in five minutes when he is making the watering-pot, if he is told that a strainer is wanted inside the watering-pot over the spout to slide up and down like a carriage window.

Shrubland Park Gardens,
March 9th, 1841.

[Having frequently experienced the inconvenience mentioned by Mr. Beaton, I have had a watering-pot made according to his suggestion, which appears likely to answer very well. It was made of zinc by the Western Zinc Company, New Road.—Ed.]

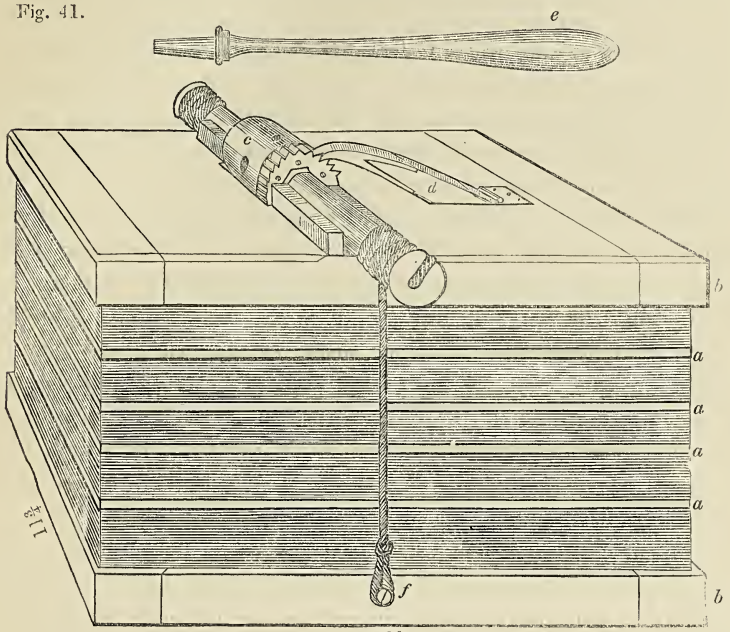
THE KENTUCKY PLANT-PRESS,

BY MR. CHRISTIE.

The Kentucky plant press (of which *fig.* 41 is a representation) is made of hard dry mahogany, the upper and lower boards *b b* being $1\frac{1}{2}$ inches in thickness and clamped at the ends; the barrel *c* projects at each side three inches beyond the edge of the top board, to allow the cord room for coiling around it: the barrel is perforated through its whole length that the cord may be in one piece; it can thus be adjusted to an equal degree of tension on each side. The central portion of the barrel is fitted with a brass rack firmly screwed to it, which receives the point of the

stop *d*. The lever *e* being placed in one of the four apertures prepared for its reception and pressed down, it has the effect of winding the cord

Fig. 41.



18½.

around the arms of the barrel; and the end of the cord being tied in a loop, and put over the head of the stout screw *f*, any degree of pressure may be produced. The end of the stop *d* is armed with brass, and it is at the other end hinged to the top board. *a*, *a*, *a*, *a*, represent four thin pine boards, used to separate the plants in different stages of dryness.

In point of usefulness and convenience this press possesses many advantages over all the methods of drying plants now in common use. The elasticity of the cord used with it causes it to follow any shrinkage that may take place in the plants; while at the same time the degree of pressure it is capable of renders such an occurrence rare. It is very portable, as it may be moved from one part of the house to another without the least disarrangement of its contents, an advantage of consequence over the use of boards and weights; and while thus secure, it may be opened for examination and reclosed as readily as the weights could be removed, and in much less time than would be consumed in opening and refixing the boards with straps and buckles, in the way they are generally secured by travelling collectors, for preserving their plants. It also may be made of any required size or lightness. The system adopted for drying plants will

be detailed below; but it may be observed here that the papers used for this purpose being of two colours, say blue and red (most of the former colour), the plants are placed between those of a red colour only, the blue being used simply for absorbing moisture; the advantage of which is, that you know at once where to look for your plants, without having to hunt through every sheet for them. Thin deal boards, the same size as the press, are interspersed between the various sets of plants that may be in different stages of dryness, the boards always being warmed to as high a degree of temperature as possible before they are put in, which, combined with frequently changing and drying the papers, has the effect of speedily preparing the plants for the herbarium. The boards should be of white deal, with no perceivable quantity of turpentine in them; and where plants are very full of leaves, it is of much advantage to place a piece of writing-paper between them, so that each leaf may dry without adhering to any other; where any of the leaves have, through keeping, become limp and partially shrivelled, it is advisable to inclose them in a piece of stiff paper folded like a piece of note paper, which ensures their drying in a proper shape, an object frequently of much importance in determining the species.

The method of using the press is as follows:—having provided a sufficient quantity of stout paper of two different colours (say blue and red, or white), in about the proportion of eight of the one colour to two of the other, the plants are to be spread out on a sheet of the lesser quantity, say the red or white, and another sheet of the same put over them; then four sheets of the blue paper, or any other convenient quantity, are placed on the bottom board of the press, then the two sheets containing the plants, on these put eight sheets of the blue, then two more of the red with plants, then blue, and so on, until the press is filled, or all the plants are placed in it; but between each four or five sets of plants, it is advisable to introduce one of the thin boards heated as much as may be convenient; this is of great use in drying the specimens, and should be done every time the papers are shifted, which may be done every day for the plants newly gathered; the boards also serve to separate each gathering, by which means the fresh plants do not affect those which are nearly dry. The only use of two different-coloured papers is, as before observed, that by always using the one for placing the plants in, you can, in shifting the papers, know where they are without the labour of looking between each sheet. A small oven, sufficiently large to take in the papers and boards, would be a very great advantage, as you could thus keep a double set of papers and boards constantly ready, and easily to be warmed thoroughly, an object difficult and tedious to attain before an open fire.

It may be as well to add, that the press in question may be made of greater or less size, according to circumstances, and is so very portable that it would be very desirable as part of a traveller's equipage.

30, Upper York Street, Seymour Place,
March 14th, 1841.

[The account of this press was procured for me from the maker of it, by my kind friend Capt. Mangles, who has had one made to send to Australia.]

ON THE CULTIVATION OF THE BALSAM.

BY MR. LAWRENCE, GARDENER TO THE REV. THEODORE WILLIAMS, HENDON.

The seed may be sown from the first of March to the end of April, or first week in May, in shallow pots or pans, in loamy compost. Three-fourths yellow maiden loam and one-fourth rotten dung, is excellent for them throughout the whole routine of shifting. The seed pots or pans may be placed in any hotbed till the plants attain the height of about three inches. Then shift them into 60-sized pots, and place them in a frame by themselves, on a gentle bottom heat. I have always found beds made of tan, having dung walls built between stakes driven into the ground, much better than those made of dung alone, because the heat is more regular, and infinitely more lasting. I consider the great beauty of a plant of this kind is to make it branch from as near the ground as possible; two inches distance from the roots to the lower leaves is quite length enough of stem. Shade the young plants a few hours in the middle of the day for two or three days, if they flag at all after the *first* shifting; after which, take off the lights at eight o'clock in the morning, keeping them off till four in the afternoon, which will be the time for watering them; this may be fearlessly performed by pouring it through a rose over their heads. Shut them up close till eight the next morning, at which hour at latest they ought to be fully exposed to the sun till four in the afternoon. Shift them every ten days or fortnight into pots a size larger than before, till they arrive at those pots known as Nos. 24, 16, or 12, the last being the largest. The pots must then be re-plunged in the bed, which must be forked up, to increase the heat, every time the plants are shifted. They may be either set on the tan or plunged in it, according to the heat; if it is great, do the first; if the heat is gentle, do the latter. As the plants increase in height raise the frame with bricks, and do not fill up the opening around, but allow a free ingress of air all around the bottom of the frame.

The plants can be made to flower in any size pot, from No. 60 to No. 1, by desisting from shifting; but 24, 16, or 12, are the general sizes. When they are intended to flower they may be removed from the frames to the greenhouse, &c., and ought to be kept rather warmer till the flowers begin to expand; but if they are kept cool and shaded in the middle of the day, it greatly prolongs their flowers.

Window Gardening of Balsams.—Sow the seed from the middle of March to the middle of April, in a pot or pan; cover the top of the pot with a bit of glass till the plants appear; keep them inside till they are about three inches high; then pot them into No. 60-sized pots after a few days; set them outside at eight o'clock in the morning, and let them remain till four or five in the evening, keeping them inside all night; shifting them when the roots begin to coil around the insides of the pots, which will be found necessary about every three weeks; continue this treatment, shifting from the pots No. 60, to No. 48, 32, and 24, and turning the plants round every day. I have seen plants grown precisely in this manner far superior to many which have been cultivated in frames or greenhouses. Indeed, it is much better to cultivate them altogether in the open ground, than to excite them in the extreme heat they are too often subjected to.

ON THE ATTACHMENT OF THE ROBIN FOR MAN.

BY MR. ANDERSON, CURATOR OF THE CHELSEA BOTANIC GARDEN.

I AM requested to state to you the attachment a robin redbreast had for me in 1837. You know that our frames for raising seeds are by the river side, and that there is a shed in front of these frames. This shed is about twelve feet long and six feet and a half wide, with a low wall at the east end, and a boarded end on the right, or west end, the frame of which has many small shelves fixed in it; there is also a shifting board attached to this wooden wall, which is about ten feet long and about three and a half feet broad, on which is the mould for potting. The robin had built its nest on the highest shelf, and this was done before I noticed what was going on; indeed, we noticed nothing very particular till there was a family of five to provide for. Then came work for both birds; and we were much amused to watch the coaxing ways that the male bird made use of to get his wife to do her part in the providing. He would talk to her on the low wall, take the worm from her, come hopping along the board before me, and frequently would stop before me, look at her, and then look

sternly at my eyes, before he gave it to the young ones; but the lady could never muster courage to go to the nest while I was in the shed.

This had vexed Bob very much, and although the five young ones were reared, he bore it in mind; for in about a week after they left the nest a new nest was begun; and this second, as if purely to vex his wife, was just over my head, between the tiles and a rafter, assisted a little by a thin lath that had been stuck in between the tiles. This nest had three eggs in it when I missed both the birds. I took a flower-pot, and raising myself looked into the nest, when the accident was plain. There had been so little room for the birds to sit in, that they had been picking the mortar to give room for their heads, and about four inches of it had given way and fallen right across the nest, which accounted for their leaving.

When all was fed and settled, about ten or eleven o'clock Bob would perch near me, and divert me with an hour's song or more. This was a very different music from the *hurry-balloo* that he makes morning and evening, that being a song of defiance, and frequently answered by another; but these domestic notes are really delightful, with many variations, and not to be heard at twenty yards distant. This would be Bob's note were he in a cage, but it would be some trouble feeding him, to keep him in health.

But I must also tell you, that Bob was not devoid of interested motives; as we have a small pan slung to a rafter, out of the reach of the sparrows and mice, into which we have been in the habit of putting the crumbs from the bread-basket. This I suppose was the ruin of Bob, for all that autumn he would get into the pan, and so rub himself in it that he could not make use of his wings, in which state I am afraid the cats caught him. The heat of his body, which made him rub himself among the crumbs in the pan, may have arisen from the salt in the bread.

Chelsea,
Feb. 22, 1841.

ON BIRDS OF PREY.

BY MR. MAIN.

Most of these are included in the order *Accipitres* or *Raptores;* and among these some of the largest are the sea-eagle, an inhabitant of several parts of Great Britain, but by no means plentiful; the golden eagle, on mountains in Ireland and Wales, and the ringtail eagle, in size and colour like the last, but distinguished by a white band across the tail. The Erne is a

smaller eagle, with dark brown and white plumage. The Hen-harrier is a still smaller bird, but with all the propensities of the eagles. The Kite is a beautiful bird and flies remarkably steady, guiding her motions in the air by the inflexions of her tail, as a boat is guided through water. Next there is the Falcon Gentle, a bird tamed and used in the ancient sport of falconry. This sport, which was so much delighted in by our sovereigns and nobility in former times, is now almost given up, there being but few persons besides the Queen's Grand Falconer who keep *mews* for hawks. Several species of the hawk genus were trained to this pastime, the larger species for large game, and the smaller and more fleet for partridges and other small birds. The chase and capture of the heron by the falcon is, though cruel, very interesting. The falconer, with his hooded hawk, places himself between the heronry, and the lake or river where the herons go to feed. Soon as one takes wing to return home, and when within a few hundred yards of the falconer's station, the hawk is unhooded and unslipped from the arm. The hawk soon eyes his prey, and flies in spiral circles higher and higher to get above the heron before he makes his deadly stoop. The heron, seeing her enemy approach, and visibly alarmed, endeavours to rise higher in the air to keep above the assailant. But the rapid flight of the latter soon enables him to tower high above his victim; and then, poising himself for a few moments, he takes an unerring aim, descends like lightning upon the back of the devoted heron, where he fixes both talons and beak, inflicting at once several wounds, and both victor and vanquished fall fluttering to the ground together. It sometimes happens that the first pounce is so severe that the prey falls stunned to the ground, when the hawk quitting his hold immediately returns to the perch or arm of the falconer. In hawking partridges, the hawk flies directly from the perch, selecting one bird of the covey, which by one blow he tumbles stupified to the earth, and if well trained, returns instantly to the lure.

The next to be noticed is the Hobby, or Tree Falcon. These handsome birds are frequently seen hovering over, or perched in, lofty woods; they soar in circles like the kite, but do not appear to have half the vigilance of other hawks. The common Buzzard is a much larger bird than the hobby, and preys chiefly on mice, young rabbits, and hares; as its heavy and indolent motions unfit it for any kind of pursuit. The Spotted Buzzard is as large as the last, that is, about twenty-two inches in length from the point of the beak to the end of the tail, but is not so plentiful. The next is a beautiful little hawk called the Kestril; it is rather plentiful, breeding in thick woods, and it lives chiefly on mice and the callow young of birds. The Hanner Hawk inhabits unfrequented parts of the country,

and is rather rare. The Osprey is a large species, and lives about lofty cliffs on the sea-shore. The Gyr-Falcon is another beautiful but very locally distributed bird. The Honey Buzzard is so called because parts of a wasp's comb have been found in their nests by the side of the young buzzards—a sign of their being insect-eaters rather than honey-eaters, as the larva of wasps is eagerly devoured by many kinds of birds. Moor Buzzards are usually seen on waste ground, especially where there is much furze and broom, where they nestle and breed. The Gos-Hawk is a large elegant bird, and has been trained for hunting the larger kinds of moor-game. Next we have the Sparrow-Hawk, one of the least, but certainly one of the boldest and most rapacious of the whole tribe. All sorts of small birds, and even pigeons, are his usual fare; and when inclined for a lark, he flies quickly over and close to the stubble, and if he flushes one, he rises instantly after it, and rarely misses his aim. If the lark squats through fear, he turns and drops like a stone upon the trembling bird. So well-known is the sparrow-hawk to all the feathered race, that his appearance is a signal for war among the larger birds; as the raven, rook, crow, magpie, jay, and even the domestic poultry, are all up in arms, while the smaller birds sound notes of alarm, and fly to covert. The swallow, house-marten, and wagtail, despise his powers of wing and vengeance, rise to meet him, provoke, and buffet him away from the place. We once witnessed a battle between a sparrow-hawk (which we suspected was a young one) and a numerous flock of swallows and martens, which had congregated before their departure in the autumn. The whole posse crowded round the hawk, and their taunts and revilings at last roused his anger. Most wrathfully he darted in all directions against his tiny but far fleeter foes. He might as well have attacked an army of flies; for though he towered repeatedly above all and stooped with all his fierce velocity, he failed in every attempt, and at last, fairly tired out, slunk away discomfited.

The sparrow-hawk builds a shallow nest of sticks on trees, and usually has a pair in a brood. The young are covered with shaggy white down before they are feathered; and they very soon show their natural disposition by snapping their beaks at everything that moves near their cradle. The young are easily brought up by hand, but not easily tamed, they always retaining their natural antipathy against other animals, especially other birds.

The Peregrine Falcon is a handsome bird, but rare; the species being only known in a wild state in Wales. The Grey Falcon is another equally handsome and rare species. The smallest of all the hawks is the Merlin, which is not above six and a half inches in length. It is very

locally distributed, there being many parts of Britain where it is never either seen or known.

The birds of prey are very different in their manners and in their choice of food. Some live entirely on fish, and breed on the rocks overhanging the sea. Others reside in mountainous wilds, and feed on hares or any other animal they can master. Some emigrate to distant countries at certain seasons, and return at others. Some nestle on trees, others on the ground among heath or other low shrubs. Throughout the whole family the females are larger, and in several instances more beautiful, than the males. The young and mature birds very often differ much in colour; and this, with the circumstance of the females being larger than the males, has caused discrepancies in the descriptions of authors.

Next to the birds of prey rank the curious family of owls; and as far as the title of plunder is one of distinction, the owls should partake of it, as they are, in their quiet way, fully as predacious as the eagles. They are all night-birds, and on this account their power of vision is stronger in twilight than in broad day. The Strix *otus* is the long-eared owl, met with only in mountainous countries, breeding in the cliffs of the rocks. The short-eared or horned owl—the horns consisting of a single feather—is only a seasonal visitant, and then never plentiful. The White Owl, *S. flammea*, lodges in ivy-covered trees, in barns, or other out-buildings about farm-houses. It also inhabits church-towers and ruins, and there its screams are considered ominous. The *S. ulula* is the common hooting brown owl, and in manners, though not in voice, very similar to the foregoing. Some have asserted that they sometimes pair together; but this requires confirmation. These birds, however harmless and useful to the farmer, are a persecuted race. Their cries frighten children; and they are not very kindly regarded by the nurses or parents, especially if heard near the nursery windows! We never heard the owls accused of any mischievous action, save only their penchant now and then for a bit of fish—especially gold-fish kept in pools or basins in gardens. It has been affirmed that the owl watches the movements of the fish, and if any one approaches near his station he suddenly clutches it out of the water with his foot. The owl is often compared in his mousing propensities and contour of his head with the cat. The comparison may be carried a little farther, perhaps, by saying that they both are fond of fish, though neither are naturally fitted to be fishers. Bating this (and which after all may be only a malicious slander), we know not a more harmless nor more useful creature. All night long the owls are hunting in the barn, or along under the hedges of the fields, devouring every mouse they can find; and when they have young, they destroy immense numbers of these corn-

eating vermin. Both the white and brown owls should therefore be encouraged about a farm, and not molested and hunted away, as they always are by thoughtless boys. Even the small birds take delight in teasing the owl. If discovered crouching in some dark nook of a thick or ivy-covered tree, by a wren or chaffinch, they immediately give a note of alarm that "the schoolmaster is abroad." The alarmists are joined by blackbirds, thrushes, and all the smaller birds in the neighbourhood, and unite in upbraiding the poor owl, but without disturbing his composure, he contenting himself with only staring them out of countenance. The *S. passerina* is the smallest British owl, and is most plentiful in Yorkshire: it is not much bigger than a song-thrush.

The next genus in English ornithology is the LANIUS, of which there are three species, viz. *L. excubitor*, *L. collurio*, and *L. sylvanus*. The first is the greater Butcher-bird; the second is the Flusher; and the last is the Wood-chat Flusher. They prey on small birds, and they are called *butchers*, because when they have caught a small bird they *impale* it upon a thorn of the hedge while they strip and devour it. They are rather rare birds, and migrate. They are known by having a notch on the upper mandible.

REVIEWS.

THE BOTANICAL MAGAZINE for March contains—

Cycnoches Loddigesii, var. *leucochilum* (t. 3855). An orchideous plant, a native of Guiana, differing from the species in having a white lip.

Stevia trachelioides (t. 3856). A pretty greenhouse plant, belonging to the Compositæ, with reddish purple flowers.

Helichrysum niveum (t. 3857). A beautiful kind of Everlasting, raised by Mr. Lowe, of Clapton, from Swan River seeds. The flowers are cream-coloured, with a yellow centre.

Anchusa petiolata (t. 3858). A half-hardy Anchusa from Nepaul, with bluish purple flowers.

Tofieldia pubens (t. 3859). A greenish flower, of no beauty, from North America.

Gardoquia Betonicoides (t. 3860). The common species of Gardoquia is sometimes called the Scarlet Thyme; but the present species is of a pale crimson, with blue anthers. It is a greenhouse plant.

All the plants in this No., with the exception of the Tofieldia, are now figured for the first time.

The Botanical Magazine for April contains—

Crocus speciosus (t. 3861), and *C. suaveolens* (t. 3864). Well-known species of Crocus, both of which have been figured before.

Herbertia pulchella and var., and *H. cœrulea* (t. 3862). Three very pretty kinds of a very pretty, half-hardy, bulbous-rooted plant.

Bomarea simplex (t. 3863). A tender bulbous plant, with pink and yellow flowers.

Callithauma viridiflorum and *C. angustifolium*, *Cobergia coccinea*, and *C. Trichoma* (t. 3865, 3866, and 3867). Rare bulbous plants, with showy flowers, which are as yet only in the possession of the Hon. and Rev. W. Herbert.

Five of the plates in this No. contain new flowers, all of which are of rare bulbs.

The Botanical Register for April contains—

Colea floribunda (t. 19). This very singular plant is most nearly allied to the Bignonia, or Trumpet flower. It has bright yellow and white flowers, produced in rings round the stem, always growing on the old wood, like those of the Judas-tree. It is a native of Madagascar, and requires a stove in England.

Impatiens candida (t. 20). This is another of the new Nepaul Touch-me-nots, and it has large white flowers, slightly speckled with crimson. It is a half-hardy annual.

Armeria fasciculata (t. 21). A shrubby species of Thrift, which is half-hardy in British gardens.

Triptilion spinosum (t. 22). This very beautiful little plant belongs to the Compositæ. It is a native of Chili; and is difficult to flower in England. It is generally kept in a greenhouse. It was introduced in 1827.

Chysis bractescens (t. 23). A very handsome Mexican epiphyte, with white and yellow flowers.

None of these plants have been figured before.

In Paxton's Magazine of Botany there are—

Odontoglossum grande. A magnificent orchideous plant.

Gentiana septemfida. A pretty blue Gentiana, introduced many years since, and before figured in Bot. Mag. t. 1229; and

Prince Albert's Camellia, a variety of *C. japonica*, raised by Messrs. Chandler.

The orchideous plant, which is most beautifully executed, and the Camellia are new.

In the Botanist are—

Stylidium Drummondii. No. 213. A very handsome species, with large pinkish flowers, from the Swan River.

Rafnia triflora. No. 214. A leguminous plant, with yellow flowers.

Senecio populifolius. No. 215. This is apparently a variety of the plant formerly well known by the name of *Cineraria populifolia.*

Epidendrum umbellatum. No. 216. An orchideous plant, frequently figured before.

Of these the Stylidium is new, and perhaps the Cineraria, if it be a variety or hybrid.

In the Botanic Garden are—

Neottia cernua. No. 782. A terrestrial orchideous plant, introduced in 1796, figured before in Bot. Mag. t. 1568.

Aconitum japonicum. No. 783. The Japan Wolf's-bane. A very showy species, introduced in 1790.

Primula longiflora. No. 784. A very pretty species of primrose, introduced in 1825.

Hedysarum sibiricum. No. 781. A handsome species of Hedysarum, introduced in 1700.

EXTRACTS FROM BOOKS.

MR. WARD'S PLAN FOR GROWING PLANTS IN CLOSED BOXES

Depends primarily and fundamentally on protecting the plants from too free communication with the outer air. This end is obtained by the use of glass, the light so essential to vegetation being thus freely admitted. The most ready way to try the experiment is, to procure a glass vessel,—for instance, one of those jars used by druggists and confectioners; introduce some soft sandstone, or some light soil, filling one-sixth of the jar with it, and taking care that the earth is very moist, yet allowing no water to settle at the bottom of the jar; plant a fern in the earth, and then cover the jar with its glass lid, first supplying a slip of wash-leather round the rim of the jar, which will pretty nearly cut off the communication between the internal and external air: no farther attention will be required. The fern will live, thrive, and probably seed, the seed also vegetating, and at last the jar will become too small for its contents: no watering is needed; the moisture in the earth will exhale, condense on the glass, trickle down its sides, and return to the earth whence it arose.

There is no limit to the application of this principle: instead of a jar, it is easy to construct, in the window-sill, a box extending throughout its entire length, the bottom and sides being lined with zinc, to prevent the moisture from damaging the adjoining wood-work; then let the window be a double one, like those in Russia, leaving a space of six or twelve inches between the inner and outer glass. The ferns so planted in the box, which should contain a depth of five or six inches of light sandy earth, will soon fill up the space between the two windows, supplying the most beautiful curtain or blind that could be invented. The plants need not be ferns exclusively—Roses, Fuchsias, &c. would also thrive; but it must always be borne in mind, that plants requiring a humid atmosphere should not be enclosed with those which prefer aridity: of course the upper sash alone must be made moveable. Extending the plan still farther—a large garden, entirely enclosed with glass; all the doors should be fitted with great nicety and exactness, and would be better if double, and always one of them shut before the second is opened.—(*Newman's Ferns.*)

QUERIES AND ANSWERS.

WINTER-FLOWERING HEATHS.

I HAVE long been very fond of Heaths; and I wish particularly to know what kinds will flower in winter. Can you favour me with a list of those most ornamental in December, January, and February, with a few hints for their culture?—M. T.

LANCASTER, *February* 1, 1841.

One of the most beautiful of the winter Heaths is that appropriately named *Erica hyemalis*, with a profusion of blush-coloured flowers; but many others are often very abundantly in flower during the winter months. Of these *Erica Archeriana* retains its fine red flowers nearly all the winter; *E. ollula* has rose-coloured flowers; *E. autumnalis* has red flowers; *E. grandinosa* is a handsome species, the flowers of which are white; *E. Bowieana* is white; *E. vestita coccinea*, and *E. v. superba*, both splendid plants, have red flowers, and both require a loamy soil, like that used for Geraniums; *E. Sebana lutea* has yellow shining flowers, and should be grown in lime rubbish mixed with very sandy peat; *E. Lambertiana* has white flowers; *E. caffra*, white fragrant flowers; *E. imbricata*, pink

flowers; and *E. Massoni*, which has orange and green flowers, should be grown in pure sand, with artificial heat.

Many other kinds might be mentioned; but most of these were in flower in January last, at Henderson's Nursery, Pine-apple Place, Edgware Road, and many of them at Hopgood's Nursery, Craven Hill, Bayswater Road.

The great secret of managing Heaths is to water them regularly, never giving them either too much or too little. The pots should be well drained, and the best soil for most of the species is a mixture of peat and silver sand. The plants should be potted high, with the collar of the plant slightly raised above the surface, as when this part is covered with soil, it is very apt to rot.

CULTIVATION OF BALSAMS.

A SUBSCRIBER to "The Ladies' Magazine of Gardening" wishes to know the best mode of raising Balsams, as he has been for some years unsuccessful, having lost nearly, and sometimes all, when about two or three inches high.

Balsams never thrive, unless both raised and kept for some time in a hotbed, as they should grow rapidly. They also require transplanting very often, to make them attain a large size. The seeds should be sown on a hotbed in March or April, and the seedlings transplanted as soon as practicable into very small pots, which should be plunged into the hotbed and well supplied with water. In about a week or fortnight, the plants should be removed to larger pots; and this operation should be frequently repeated till the flower-buds begin to form, after which the plants must not be removed any more. They must also be gradually hardened to bear the open air; and the pots need not be plunged in the hotbed after the plants are six inches high. When placed in a balcony to flower, they should be grown in double pots, the interstices between the two being stuffed with moss. The pots should be well drained, but the plants should be supplied abundantly with water. The seeds of Balsams should be used as fresh as possible, as they will not keep good more than a year. Balsams are sometimes propagated by cuttings in pure sand, and covered with a bell-glass. An article on the Balsam will be found in the present Number. (See p. 137.)

PLANTS FOR GLASS CASES.

MADAM,—Could you oblige a London amateur of flowers, and an admirer of your truly splendid works on Floriculture, by inserting a list of *low-growing* plants, suitable for the closed glass cases so much used, in your "Ladies' Magazine of Gardening?"

As far as my own opinion goes, I confess I am no friend to plants in glass cases. They have a confined unhealthy look through the dingy glass, which is repugnant to all my ideas of floral beauty. This, however, is entirely a matter of taste; as many persons much more competent to judge than I am think otherwise.

Ferns and mosses succeed better than any other plants in glass cases; and the best kinds are the dwarf species of *Asplenium*, *Aspidium*, *Adiantum* (maiden hair), *Lycopodium* (club moss), *Polypodium*, *Pteris* (brake), and *Trichomanes*. The appearance of these may be seen in Sowerby's *Cryptogamia*, now publishing in shilling numbers. Other plants are—*Oxalis acetosella*, the wood *Anemone*, the mountain *Veronica*, the bird's nest *Neottia* or Lady's tresses, *Dentaria bulbifera*, *Paris quadrifolia*, and, in short, all dwarf plants that grow naturally in low damp situations. Crocuses and hyacinths are also said to succeed in glass cases. Some account of the glass case invented by Sir John Robison, which is an improvement on that of Mr. Ward, will be given in the next Number. An extract respecting Mr. Ward's cases, is given in the present Number, under the head of "Extracts from Books." See p. 145.

AQUATIC AND MARSH PLANTS FOR A LONDON GARDEN.

Having cut down the window of my back dining-room to the ground, I find that the flowers I have placed in front of it, within the room, on a broad slab of Alhambra Mosaic, are not sufficient to conceal the unsightly area, so common in the back premises of all London houses: to remedy this defect I have had an oblong wooden trough made (13ft. 4in. + 3ft.), coming close up to the window-sill, to be used as a fish-pond, having two receding rows of plants on either side of the stream so as to inclose the canal with flowers; a row of handsome shells on either side overhanging the water on a narrow iron rod fronts the plants. Can you point out any *aquatic* productions which would be likely to thrive in my narrow tank (1ft. 2in. deep) were I to sink them in pots? my aspect is north, and I get very little sun. There is a pink autumnal-flowering and sweet-scented plant in the Bayswater end of the Serpentine, in Kensington Gardens. I do not know its name, but am told it is amphibious, and I have seen it in flower in the coarse gravel of new-made roads when covered with shingle: would it do, or do you know of any that would? Could you name a few plants, *not aquatic* (besides the musk plant), likely to thrive in my sunless and limited premises?—James Mangles.

N.B. I have sponged the leaves of my Camellias as practised by your interesting and observant correspondent (see p. 44), and found the good

effects. Almost immediately on making the application, the water was literally black, and the plants have amply rewarded me for the salutary treat I have given them.

Cambridge Terrace, *March* 4, 1841.

Two of the handsomest aquatics I know are *Aponogeton angustifolia*, and *A. distachyon;* they have both white flowers tinged with pink, and black anthers, which give them a very lively appearance. *A. distachyon* is much the larger plant of the two. They are both tolerably hardy, but require protection during winter. *Pontederia cordata* has arrow-shaped, erect leaves, and an upright spike of dark purple flowers. It is a native of North America, and is quite hardy in England. *Butomus umbellatus*, the flowering rush, with its heads of pink flowers, and *Acorus Calamus*, the sweet-scented water-reed, are tall, showy plants, as is *Cyperus longus*, which last bears some resemblance to the *Papyrus* of the Nile. For smaller plants, may be mentioned the little Frog-bit, *Hydrocharis morsus-rana*, with its pure white flowers; *Hootonia palustris*, the water violet, with its pretty pink flowers; *Calla palustris*, the water dragoon; *Caltha palustris*, the marsh marigold; *Nymphea alba*, the common water-lily; *Stratiodes aloides*, the fresh water soldier; *Sagittaria sagittæfolia*, the Chinese arrowhead, with its white and green flowers; *Pinguicula lusitanica*, *Samolus valerandi*, *Villarsia nymphæoides*, the yellow fringed buck-bean; *Comarum palustre*, and *Nuphar advena*. The beautiful little *Polygonum amphibium*, the rose-coloured water pepper, with its dark pink flowers, of which there is so much in the large piece of water opposite the palace in Kensington Gardens, is quite hardy; as is *Menyanthes trifoliata*, the common buck-bean. These are all common, but *Thalia dealbata*, a curious black and white plant, and *Trapa natans*, also curious, are more rare.

For the plants not aquatics, but which will thrive from having their pots plunged in water, are *Calla ethiopica*, the tall scarlet Lobelias, and all the kinds of Mimulus. As a companion to the little musk plant, I may recommend the *Myosotis palustris*, the true forget-me-not, and *Houstonia cœrulea*, a pretty little plant, with very pale, star-like flowers.

The following bulbs will also grow and flower splendidly with their pots half plunged in water. *Crinum capense*, the white, striped, and purple *Cape Crinums; Amaryllis speciosa*, sometimes called *Hippeastrum purpureum*, and sometimes *Vallota purpurea*, with dark crimson, lily-like flowers; *Pancratium Mexicanum;* and *Calostemma purpurea*, *C. lutea*, and *C. alba*. All these are half-hardy bulbs, and require protection during winter.

For plants not plunged in water, which require but little sun, the best perhaps are the *Camellias* and *Fuchsias;* particularly the splendid new *Fuchsia Standishii*, and *F. fulgens*, and *F. corymbiflora*. All these *Fuchsias* like a very rich soil, and a shaded situation; but to these must not be added the well-known *Fuchsia globosa*, as that species will not flourish without plenty of light and air.

AUSTRALIAN SEEDS.

The following letter was addressed to Mr. Beaton:—

Sir,—Having seen, in Mrs. Loudon's Magazine, your kind offer of affording additional information to any one interested in the raising of foreign seeds, I have ventured to send you a list of eleven sorts, received a few days since from a son, now a settler in the interior of Australia. I think I understand your published remarks, and it appears to me they apply more particularly, if not entirely, to shrubs or trees. Now, I hope some of the seeds sent to me may prove blooming annuals. Will you therefore have the kindness to inform me if any of them are such as I hope, and if so, whether any other plan is requiste than those you have already so clearly laid down?

J. W. Manning.

Although your promise of answering inquiries was only offered through the medium of the Magazine, I hope you will not object to reply direct to me, as it will save time; and Mrs. Loudon shall have copies sent to her if you desire.

Australian Seeds.—Acacia longifolia, Melaleuca ericifolia, Leptospermum stellatum, Acacia splendens, Viminaria denudata.

Moreton Bay.—Callistachys lanceolata, Pomaderris lanigera, Pultenea plumosa, Dillwynia parvifolia, Polygala speciosa, Grevillea robusta.

3, Paragon, New Kent Road, London,
March 1*st*, 1841.

To this, Mr. Beaton sent the following answer:—

Madam,—The seeds you received from your son are those of shrubby greenhouse plants, of the easiest culture. You will find no difficulty in rearing them, especially if you have a cucumber-frame.

The directions about sowing seeds in Mrs. Loudon's Magazine are applicable to all sorts of foreign seeds. The great point desired in sowing the hardier kinds of seeds in a cucumber-frame, is to get them to vegetate as early in the season as possible, that the young plants may have more time to gain strength before the growing season is over, which will enable them to stand the vicissitudes of our dreary winters with less risk.

The seeds of the two Acacias, the Callistachys, and the Polygala, being the strongest, you should cover them the depth of half-a-crown piece, and the others will do quite well with a covering the thickness of a sixpence. Do not give them much water, merely keeping the soil a little moist; if you place them in the front of the frame, it will shade them a little, and then they will require less water. You may leave them in the frame a week or ten days after they are up, unless you see they are growing weakly, when you must remove them to a window in a warm room, which will be a better change for them than to place them in a greenhouse at first. You need not be in a hurry to transplant them till the young plants are well hardened; and choose a cloudy day for this first potting, or when there are likely to be two or three wet days. This will save you the trouble of shading the young plants, and the moist, cloudy weather will be better for establishing the young plants in their new pots. If the plants come up thick, you may plant three or four of them in one small pot, keeping them close by the side of the pot. When they have been six weeks or two months in this pot, you may then pot them in single small pots. There are many splendid annuals in central Australia, where your son is settled; and also low herbaceous plants, that will look as well in beds as the scarlet verbenas; but people who are not much acquainted with plants never think of gathering seeds of these, because they think they are weeds; and so they are in that country, growing among rough grass and low herbage. Dr. Lindley published an account of a vast number of these beautiful plants; and you ought to see his book, and, if possible, send a copy of it to your son. Mrs. Loudon can best tell you how and where you can see this work.

I am, madam, respectfully your obedient servant,

D. Beaton.

Shrubland Park, *March 4th*, 1841.

TREES IN KENSINGTON GARDENS.

Madam,—As I observe you are so indulgent to your readers as to gratify their curiosity by minute attention to their queries, I venture to send you one which, although it does not come under the head of flowers, or the operations of gardening, I hope you will have the kindness to reply to.

I am a frequent visitor of Kensington Gardens, and have been much puzzled this spring in endeavouring, but in vain, to ascertain the name of some strange-looking young trees in the new belt of plantation on the south side of the gardens. The trees I allude to are tall and slender, with pendulous yellow or golden-coloured branches, twisted and straggling

about in fantastic forms, somewhat resembling ropes. Perhaps I ought to have patience till they are in full foliage, as I might without troubling you recognise the leaf; but you have treated your readers with so interesting a history of the Camellia, &c., that I have some hopes you will favour me with such an account of these singular-looking trees as shall add greatly to my enjoyment when again beholding them.

Your Magazine, madam, has given myself and friends so much pleasure, that I hope you will excuse this intrusion, and I remain

Yours obediently, JEMIMA.

LONDON, *March 4th*, 1841.

The trees in question are the yellow-barked ash, a variety of the common kind, and they have a very striking appearance when divested of their leaves.

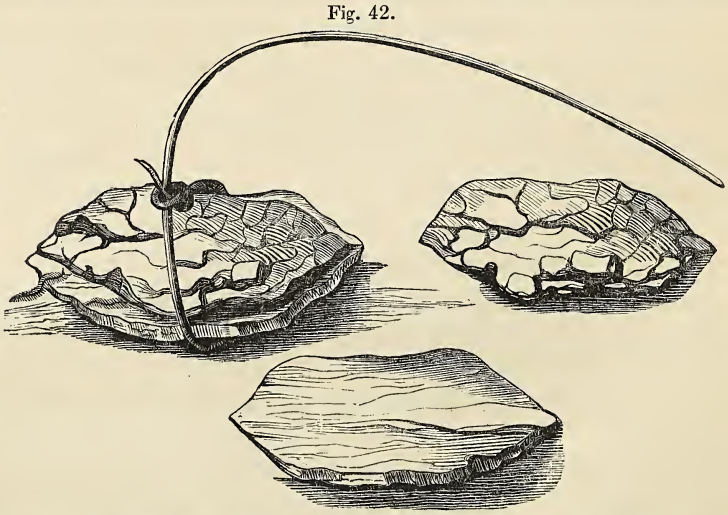
TRAP FOR WOOD-LICE.

Can you tell me what is the best trap for wood-lice? I am very much annoyed with them, particularly in a frame for raising flower seeds. I have tried flowerpots half full of hay.

BATH, *April 12th*, 1841.

Mr. Mills, whose work on the cucumber has lately been so extensively sold, has invented a very ingenious trap for catching these insects. It consists of two pieces of bark, with the hollow parts tied together with a

Fig. 42.



piece of withy (see *fig.* 42); and it is efficacious in catching also centipedes, and any kind of small insect. It must be examined every morning, when the insects it contains may be shaken out and destroyed.

FLOWER-STAND AND AWNING FOR TULIPS.

I am very much in want of a flower-stand which will take up very little room; but all that I have seen branch so much as to be quite unmanageable. I also want a portable cover for tulips—I mean a frame that can be taken to pieces when done with.

Bath, *April 12th*, 1841.

The flower-stand (*fig.* 43) was first made for Mrs. Fox, at St. Ann's Hill, Chertsey; and its stages turn round every way, so that the flowers in it may be all seen by any one sitting near it, without rising to go round it. Its height from the floor is five feet; the diameter of the lowest stage is one foot four inches; that of the second one foot one inch; that of the third ten inches; and that of the fourth eight inches. The wire border is four inches high; the bottom of the stages are of wood, and all the rest is iron.

Fig. 43.

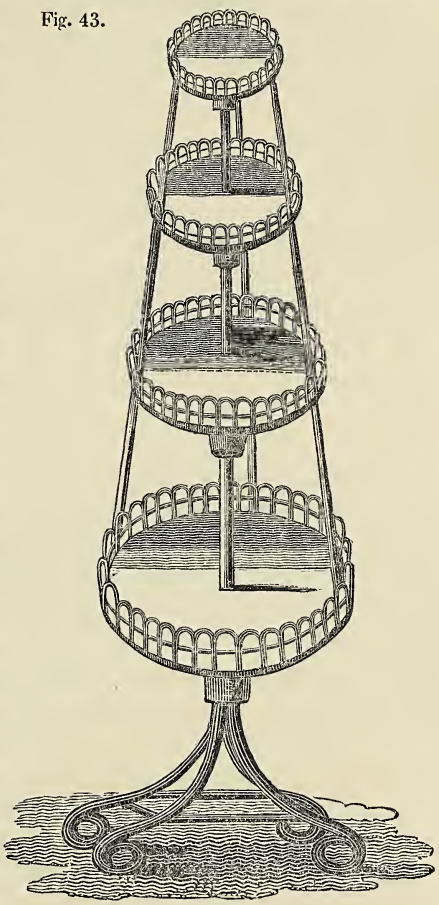
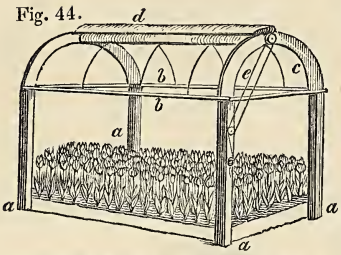


Fig. 44 shows an awning for a tulip bed, consisting of two blinds, let down or rolled up like a common window blind. The structure which supports this consists of four posts (*a*), which rest on the ground, and which are held together by the frame (*b*). At each end the posts are surmounted by a semicircular piece of wood (*c*), in which is fixed the roller (*d*), which works with a pulley at *e*. The bed is generally made about nine feet long and four feet broad; and the canvas being cut and sewed together so as to be of a proper size to cover the frame, and to reach to the ground on both sides of it, a slip of wood is nailed, or passed through the hem, at each end, as is done with a common window-

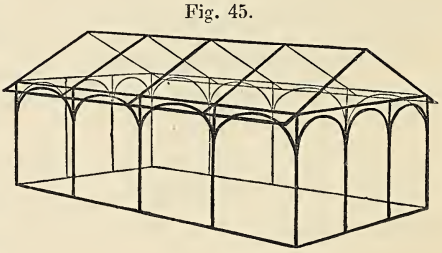
blind. Those who wish a larger covering may employ a protecting tent, see *fig.* 45, like that recommended by Captain Mangles in his admirable little Floral Calendar. The frame, which is of iron, may be made of any dimensions, according to the size required; pieces of wood being driven into the ground under each of the upright posts. Holes are bored in these pieces of wood to receive the iron posts; these holes being stopped up with wooden plugs in summer when the framework is removed. When the .frame is to be erected, the iron posts are first fixed in the blocks of wood; then the arched pieces are put on, they being contrived to fit into each other by grooves; and the roof consists of iron bars put together in the same way. In winter, the frame is covered with tarpauling, like that used for protecting ricks, which is put over the roof, and made fast by tying it to the iron posts. By a contrivance of this kind, oranges and other exotic plants may be made to appear to grow in the open air; as was done some years since at Newnham Courtenay, near Wallingford. The orange trees were planted in the open ground with turf between them, and blocks of stones, with holes in them, were placed at proper distances to receive the posts, which were of wood, with wooden shutters between. In the summer the whole was removed, and pieces of turf were put over the plugs.

Fig. 44.



PORTABLE FRAME AND AWNING FOR A TULIP BED.

Fig. 45.



DESTRUCTION OF INSECTS.

I wish to ask, if washing fruit-trees at this season of the year with lime-water that is not clear, but leaves the appearance of white-washing on the stems and buds, can injure them? My bulbs are much eaten up by wire-worms, which are brought in with the horse-dropping from the road; they are very destructive, and multiply in manure that lies long together to rot. Will lime-water kill them, and not destroy the manure?

A SUBSCRIBER TO THE LADIES' MAGAZINE OF GARDENING.

SURREY, *April 15th*, 1841.

Thick lime-water, which leaves the appearance of white-washing, is excellent late in autumn, during winter and early spring; because it tends to destroy the eggs of insects deposited on the bark, and, by its strong attraction for moisture, to ripen or harden young wood; but, after the leaves have begun to expand, it is likely to do injury by absorbing moisture from them; while clear lime-water will be equally effective as thick lime-water in destroying insects already hatched. Lime-water will not kill the wire-worm at any season. The only mode is to bury slices of some esculent root, of a sweetish taste, such as the carrot, parsnip, &c., and take them up every two days and pick off the larva. This mode was suggested by Sir Joseph Banks, and none better has probably been hitherto discovered.

PLANTING CAMELLIAS IN THE OPEN AIR.

A lady, who bestows much time and attention on her flower-garden, and who has received much pleasure from the numbers already published of the "Ladies' Magazine," would feel greatly indebted to Mrs. Loudon, if she would state where seeds of the Anemone cernua, figured in No. 2, may be procured.

Residing in the neighbourhood of Bristol, she has made inquiry at the principal nurseries there, where the plant seems unknown.

She also wishes to try the Camellia in the open air; and, in the article on that beautiful plant in No. 2, no mention is made of the most suitable time for removing it from a greenhouse, and planting it in the open ground, which she would esteem a favour for Mrs. Loudon to name in an early number.

Bristol, *April 14th*, 1841.

The best time for removing Camellias is the present; just when the plants have done flowering and have begun to grow. They should be transplanted carefully, and the earth shaken from the roots, which should be carefully spread out. The soil should be peat and sand; and a south-east or south-west aspect is better than one full south. The plants should be watered frequently during the first summer, unless the weather should be moist, and they should be in rather a shady situation. The ground over the roots should be covered with straw or dead leaves during the first and second winters, till they are thoroughly established; and, if the weather should be severe, it will be better to tie a piece of matting round the stem, so as to protect the collar, or point of junction between the roots and the stem, which is always the most tender part of the plant.

With regard to the seeds of the Anemone, an answer will be given in a future number.

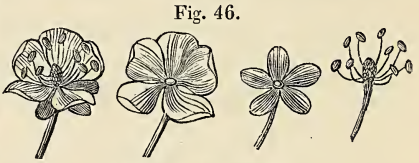
HYBRID FLOWERS.

What are hybrid flowers, and how can they be raised? I have a great deal of leisure on my hands, and I am very fond of my garden; therefore, I should be delighted to be able to raise new varieties.—H. S.

Leamington,
April 16th, 1841.

It is well known that no seeds are fertile unless the pollen from the anthers falls upon the stigma; and hybrid flowers are those raised from seeds fertilized with pollen taken from another plant. As some of my readers may not know which are the anthers and the stigmas, I may refer them to *fig.* 46, in which the figure to the left shows a plant with its stamens and pistil complete; next two of different kinds, without either stamens or pistil; and lastly, the stamens and pistil only, without the other parts of the flower. The stamens consist of thread-like stalks, with a thicker part at the extremity, which is the anther. When it is wished to produce a hybrid, the anthers of the plant which is to produce the seed must be cut off before they burst to discharge their pollen. The anthers of the other plant must then be watched; and as soon as they burst, the pollen or powder which comes from them must be collected with the point of a dry camel-hair pencil, or in any other way, and put in a paper till wanted for use. The stigmas (that is, the tips of the pistil in the centre, which afterwards becomes the seed-vessel) must be watched; and as soon as they appear a little moist, the pollen should be applied with the camel-hair pencil. A very little will do. The stigmas become moist a few days after the flower has expanded; and the pollen should be applied to them in the morning, as the moisture dries with the heat of the sun, and when the stigma is dry it cannot suck up the pollen. The pollen will keep a long time; in some cases two or three years. The plant that is to bear the seed should be planted in good soil, and frequently watered; and a bit of thread should be tied round the stalk below the flower, to know which seed has been hybridised. The seed should be sown in pots as soon as it is ripe; and if at all tender, the pots should be kept under cover during winter.

Fig. 46.



STAMENS AND PISTILS.

MISCELLANEOUS INTELLIGENCE.

I AM trying a nosegay in a jar, filled with damp sand, which is placed in another jar about one inch larger in diameter, with the space between them filled with still damper sand; a globe covers the nosegay, and is pressed deep into the sand so as to exclude the air. I am told that cut flowers will keep in this way a long time. I hope they will, though I doubt it.

I am trying another bouquet in a zinc can, with a canal-shaped rim round the top, one inch deep and half an inch wide. This is to be filled with water, and the glass cover is to rest in the fluid. I shall watch anxiously to see which will answer best, and preserve the flowers longest.

JAMES MANGLES.

CAMBRIDGE TERRACE,
April 8th, 1841.

RETROSPECTIVE CRITICISM.

MADAM,—I have for some time intended to suggest to you the usefulness of a small publication in which each number should contain instructions for the cultivation of one flower suitable for the beds in flower-gardens, so unusually adopted, viz. *Fuchsias*, *Verbenas*, &c.; giving an account of the modes of rearing them, the soil proper when turned out, whether they require much water, &c., particularly specifying those attainable by those who have no greenhouse. Having now your new Magazine, it has occurred to me that two or three pages in each number might be devoted to this object; say, to give us the management of one bed each month. Take, for instance, a bed of spring bulbs—of what roots composed at first—and what should succeed to keep up a display until the frosts in autumn. I am perfectly ignorant on the subject, but naturally passionately fond of flowers.

The floral calendar will, I hope, as the season advances, direct us as to the annuals worth growing, as the country nurserymen in many cases know little of any thing new. I hope during the present year, either in your work, or the "Horticulturist," to gain information on the subject of Roses, having purchased many during the past year for climbers, at 1*s.* 6*d.* to 2*s.* each; and find to my mortification, that after all the expense I have incurred, they do not show the least appearance of attaining any great height. With regard to the flowers figured in your

work, would it not be better to give those already in the country, stating where and at what price they are to be procured?

My correspondent will find that some of her suggestions have been adopted in the last and present number. With regard to the plants I have figured, it is true that *Paulownia* and *Daubentonia* are at present only to be had in Paris, from M. Le Blanc, Boulevard des Capucines, No. 19; but M. Le Blanc has, I believe, made arrangements with several nurserymen, particularly Messrs. Rollison of Tooting, to supply these plants to English customers. After the June number, I shall, however, only figure those plants which are readily to be procured in English nurseries.

VISITS TO NURSERIES.

Hyacinth Villa, Shepherd's Bush, Uxbridge Road.—Mr. Corsten's Hyacinth show, for so it may be called, though it is in fact a florist's garden of hyacinths, has a very beautiful effect, the more so indeed because it is one that can be imitated by any one who chooses to procure the hyacinths. Among the flowers exhibited, decidedly the handsomest, according to my taste, was Queen Adelaide, a stately bulb, that looks indeed a queen; Queen Victoria and Victoria Regina are also very fine flowers, and Prince Albert, a rich dark purple, has remarkably large bells. Among others was a hyacinth very nearly black, which was appropriately named Plus noir que noir. The Duc de Berri is remarkable as being of a golden orange, and Tubiflora is a very beautiful white. Altogether, I think no one could see Mr. Corsten's bulbs without wishing for a parterre of hyacinths.

HORTICULTURAL SOCIETY.

Tuesday, April 6.—Dr. Henderson V.P. in the chair. The meeting was attended by a larger assemblage of company than is usual even in these crowded rooms, and the exhibition of plants and flowers was unusually splendid. The collection sent by Mrs. Lawrence contained, amongst others, fine plants of *Dendrobium aggregatum*, presenting an immense mass of yellow flowers, considered the finest specimen of this species ever seen in this country; *Epidendron crassifolium*, or *ellipticum*, in a state of health and beauty rarely witnessed; *Maxillaria Harrisonia* and *M.*

aromatica, *Oncidium pictum*; three or four varieties of *O. luridum*, *O. dorsale*, and *O. hyans*, and *Dendrobium pulchellum*, all of them handsome specimens. Also *Epacris pungens*, *E. prostrata*, *Acacia Cunninghamii*, and *A. juniperina*; *Corræa speciosa*, a very large plant, well covered with bloom; and a collection of Heaths, among which were, *E. Willmoriana*, *melanthera*, *ignescens*, *carinata*, *Linnœoides superba*, *Echiiflora carnea*, and *concolor*. Mr. Edwards, gardener to the Duke of Devonshire, sent a large plant of *Acacia cordata*, and a beautiful variety of *Rhododendron*. Flowers of an extraordinarily large variety of *Camellia* were exhibited by Mr. James Prianla, of Guernsey, named by him the Marchioness of Exeter, some measured five inches and a half diameter, although partially faded, the flowers having been sent up last week by mistake. A plant of this handsome variety, which had been forced into flower, was shown from the garden of S. Rucker, Esq., of Wandsworth,in which the colour was much brighter, although the flowers, in consequence of their forced development, had not obtained the size of those produced in Guernsey. Heartseases, and *Camellias* were also exhibited by several persons; and Mr. Silver, gardener to the Rev. H. Pole of White Waltham, near Maidenhead, sent a fine specimen of *Rhodanthe Manglesii*; Messrs. Lane and Son, Berkhampstead, a collection of roses in three boxes, containing a great number of fine varieties, also a very pretty standard rose in a pot, the tea-scented Belle Allemande; Mr. Ivery of Peckham Rye had some very handsome varieties of seedling Cinerarias, of several shades of blue, red, and white, remarkable for their bright colour and size, particularly one, of which the petals were very large, and of a pure white.

Among the new plants, were from Mr. Groom, of Walworth, a new and handsome variety of *Chorizema*; from Valentine Morris, Esq., a variety of *Epidendron*, with large white flowers; from Messrs. Veitch, and Son, Exeter, *Stylidium Drummondii*, and cuttings of new species of *Thomasia* and *Cassia*; from H. Lucas, Esq., F.H.S., a bloom of a seedling Epiphyllum, raised from *E. Jenkinsonii*; from Messrs. Lucombe, Pince, and Co., Exeter, a hybrid Azalea, called *A. præcipua*, more clear and beautiful than any other hybrid; and from Mr. Rickets, a hybrid Aloe, between the partridge-breast and the tongue Aloe, bearing the warts of the latter, with the marks of the former species. A pretty glass stand for preserving cut flowers was shown by Messrs. H. and R. Underhill, of Cross Street, Hatton Garden, consisting of three pieces, —a vase to contain water, a tube to hold the flower, and a glass-shade to cover it, and with the edges resting in the water so as to keep a constantly moist atmosphere surrounding the flower.

FLORAL CALENDAR.

MAY.

This is the season for planting out half-hardy annuals, which have been raised on a hotbed, and are now ready to be removed to the open ground for flowering, and for planting Dahlias. The first of these operations is a very simple one, and only requires care and delicacy of touch. The young plants may be purchased from a nurseryman, and being taken from the hotbed on which they were reared with a trowel, they must be carefully separated from each other. The ground in which they are to be planted, should have been previously forked over and raked; and then a number of little holes should be made, and one plant put in each, taking care not to bruise either the stem or root, and to press the earth lightly down to the latter, as it will rot if a cavity be left round it. The transplanted plants should be watered with a watering-pot, having a fine rose, and shaded by flower-pots being turned over them for a day or two. Annuals, if not of very large growth, are generally planted three together, so as to form a sort of triangle.

The planting of the Dahlias is a rather more serious affair, and it is one generally more adapted to a gardener than a lady; as the transplanting seedlings is, on the contrary, more adapted to a lady than a gardener. Dahlias should be grown in very sandy loam, and they succeed best where a bed has been prepared for them three or four feet deep, with a layer of rubbish two feet deep at the bottom. They should never be grown in rich loam, unless sand or gravel be mixed with it. When planted in beds, the larger kinds should be three or four feet apart every way; and the plants are generally most healthy and produce most flowers when the tubers have not been "started," as the gardeners call it, in a hot-house. Care should be taken, in planting them, to arrange them so as to produce a good effect with the colours, which may be in rows, or any other way preferred. The dwarf plants look very well in regular flower-gardens, pegged down like Verbenas or Petunias, so as to cover the whole bed. When the larger sorts are planted, a strong stick at least two inches thick, or an iron stake, should be put into the ground at the same time as the plant, and driven in at least eighteen inches deep, for the plant to be tied to; or if this is not done, Dahlia rings should be used to keep the plant neat.

My London readers should visit Mr. Knight's Exotic Nursery, Chelsea, to see his Nepal Rhododendrons, which are now in full beauty, with flowers of the darkest and richest scarlet I ever saw.

1. Rhododendron anthopagon. 2. Rhododendron lepidotum. 3. Sedum palustre.

Day & Haghe, Lith.rs to the Queen

RHODODENDRON, *Lin.* THE RHODODENDRON.

Nat. Ord. Ericaceæ. *Lin. Syst.* Pentandria.—Decandria Monogynia.

Generic Character.—Calyx 5-parted. Corolla somewhat funnel-shaped, or campanulate; rarely rotate or 5-parted; limb 5-cleft, somewhat bilabiate; upper lip the broadest, and usually spotted. Stamens 5-10, usually exserted, declinate; anthers opening by two terminal pores. Capsule 5-celled, 5-valved, rarely 10-celled and 10-valved, as in *R. Arbòreum*, with septicidal dehiscence at the apex. Placentas simple, angular. Seeds compressed, scobiform, winged.—Shrubs or trees, usually evergreen. Leaves alternate, quite entire, terminated by a spacelate apex, or yellow gland. Flowers terminal, corymbose, showy.—(*G. Don.*)

Description, &c.—There is, perhaps, no genus which contains a greater variety of beautiful plants than the Rhododendron. The different species vary in size, from the dwarf *Rhododendron hirsutum* and *R. ferrugineum*, which scarcely rise above the ground, to the magnificent Tree Rhododendron, now so beautifully in flower in Knight's nursery at Chelsea, which in its native forests, in Nepaul, is upwards of forty feet high. They also vary in colour, from white to pale blush, and through all the various shades to deep crimson, or sometimes purple; and in the case of the Tree Rhododendron, to dark scarlet; while sometimes, as in the case of one of the species figured in Plate 6, the flowers are yellow. A very beautiful garden may be formed of Rhododendrons only, if flowers should be wanted, principally at the season when the Rhododendrons are in full perfection; and, in large places, there is almost always an American ground, of which the Rhododendrons are the principal ornaments. Many persons were formerly deterred from cultivating Rhododendrons, from the idea that they could only be grown in peat earth; but this is found to be a mistake, as they will thrive luxuriantly in sandy loam, provided they are allowed plenty of water. They have a very good effect when planted as undergrowth in woods, as is done at High Clere and in Bagshot Park. Some of the plants may be trained as standards, by constantly taking off the lower branches; and thus treated, they have a fine effect on a lawn. There are some beautiful specimens of Rhododendrons, thus trained, in the Knap-hill nursery, near Bagshot. Among the valuable kinds for a shrubbery, may be reckoned some white-flowered kinds which I saw in flower in Mr. Knight's nursery, at Chelsea, in May. These plants were in pots; but there were other specimens of the same species in the open ground, four or five feet high, which I was assured had stood in the open air through the late trying winter, without the slightest protection. The names of these plants are *Rhododendron guttatum*, *R. oculatum*, and *R. maculatum*, all with white flowers, very slightly spotted at the

throat, and a variety of *R. catawbiense*, with dark rose-coloured flowers, called Favourite. It may be observed here, for the benefit of all who purchase hybrid varieties of Rhododendrons, that all the hybrids raised between the Nepaul plant and the American species, *R. catawbiense*, are much hardier than those raised between the Tree Rhododendron and the Asiatic species, *R. ponticum*, though there is but little difference, in British gardens, between the comparative hardiness of the two species themselves. All kinds of Rhododendrons require abundance of water; and their flagging leaves show how much they suffer even by temporary drought. They also thrive most if grown partially in the shade; and the lower part of the stem, particularly the point which the roots spring from, is very much injured if it is allowed to remain long exposed to the burning heat of the sun. Nature has shrouded this part, by making the lower branches touch the ground; but it is often exposed in plants which have been submitted to the operations of art.

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1. RHODODENDRON ANTHOPOGON, *D. Don.* THE SWEET-SCENTED YELLOW RHODODENDRON.

Synonyme.—R. aromaticum, *Wall.*

Engravings.—Royle, Illust. t. 64; and our fig. 1 in Plate 6.

Specific Character.—Branchlets downy; leaves oval, rusty beneath, from lepidoted tomentum; corollas with a woolly throat. Shrub much branched. Leaves ending in a reflexed mucrone, naked above. Flowers glomerate, sulphur-coloured. Pedicels short, lepidoted and resinous. Calycine segments rounded at the apex, with villous margins. Segments of corolla roundish, with undulately curled margins. Filaments glabrous. Stigma clavate.—(*G. Don.*)

Description, &c.—This is a low-growing species, a native of the highest parts of the Himalaya mountains, being sometimes found 14,000 feet above the level of the sea. It is often confused with *R. barbatum*, which has rose-coloured flowers, but which it resembles in the flowers being hairy inside the throat. It is a dwarf plant, with very aromatic leaves. Both this and the following species are seldom met with in the nurseries, though this species is marked in the catalogues as introduced in 1824.

2.—RHODODENDRON LEPIDOTUM, *Wall.* THE SPOTTED RHODODENDRON.

Engravings.—Royle, Illust. t. 64, and our *fig.* 2 in Plate 6.

Specific Character.—Every part of the plant is beset with ferruginous scale-like dots; leaves spatulate or lanceolate, attenuated at the base, beset with round scale-like dots, as well as the branchlets, ferruginous beneath; calycine segments rounded; corollas short, campanulate, lepidoted, with roundish entire lobes; capsules also lepidoted; filaments woolly at the base.—(*G. Don.*)

Description, &c.—This plant has pink flowers, and, according to Dr. Royle, it is delightfully aromatic. It is also a dwarf plant, and it is found

at the same elevation, and in the same situations, as the other; both growing far beyond the limits of the larger shrubs and trees. In speaking of the Rhododendrons, Dr. Royle mentions that the rusty down on the under side of the leaves of some of the species is used in Nepaul as snuff.

LEDUM, *Lin.* THE LEDUM.

Nat. Ord. Ericaceæ. *Lin. Syst.* Decandria Monogynia.

Generic Character.—Calyx minute, 4-toothed. Corolla 5-petalled, spreading. Stamens 5—10, exserted; anthers opening by two terminal pores. Capsule subovate, 5-celled, 5-valved, opening at the base, pedicellate. Seeds numerous, flat, linear, scabrous, furnished with a membranous wing at each extremity. Dwarf evergreen shrubs. Leaves coriaceous, with revolute margins, and tomentose on the under surface. Flowers white, disposed in terminal corymbs; pedicels bracteate at the base. Shrubs exhaling a peculiar scent when bruised.—(*G. Don.*)

Description, &c.—This genus contains three species, two of which are natives of America, and one of Europe. The European kind is the most common, but they are all of the easiest culture. *L. latifolium*, one of the American kinds, has broader leaves and larger flowers, but its general effect is the same.

LEDUM PALUSTRE, *Lin.* THE MARSH LEDUM.

Engravings.—Lodd. Bot. Cab. *fig.* 560, and our fig. 3 in Plate 6.

Specific Character.—Leaves linear, with revolute margins, clothed with rusty tomentum beneath; stamens 10, longer than the corolla.—(*G. Don.*)

Description, &c.—This plant has small leaves, and a profusion of flowers, which generally are in full perfection in May and June. Its habit of growth exactly resembles that of the Rhododendrons: and it only requires abundance of water, and a shady situation for the collar of its root. Many plants that are quite hardy in other respects, cannot bear much dry heat at this vital part; but provided it be shaded, and the roots be kept moist, no degree of heat ever felt in this country seems to have any bad effect on the flowers and leaves. Many of my readers may perhaps be surprised to see the *Ledum palustre*, which was introduced nearly eighty years ago, in this Magazine; but I was induced to group this old plant with the two Nepal Rhododendrons, from observing the very pretty effect it produced among a number of Rhododendrons in a small garden that I saw last June. It appears to me that the effects to be produced by contrasts of colour, both in flowers and leaves, are too much neglected in landscape-gardening; and I am anxious to do all in my power to induce my readers, particularly my female ones, to take this subject into consideration, when they are pur-

chasing plants for their gardens, balconies, and shrubberies. I think we women are generally more sensitive to the effects of colour than men, probably from having occasion to think more about colours in our dress; and I am convinced if lady-gardeners generally would turn their attention to the subject, a most wonderful improvement would soon be effected in our villas and country seats. Ornamental gardening is, indeed, peculiarly the province of the fair sex. Let the lords of the creation attend to their parks and plantations; the improvement of them forms a part of the money-getting, out-of-doors occupations which are the appropriate province of men; but let that sex, whose lighter and more delightful task it is to render home agreeable, have the management of those parts of the gardens which are to ornament the house.

ON FLOWER GARDENS.—No. I.

BY THE EDITOR.

Among the many hints with which I have been favoured since the establishment of my Magazine, several have had reference to the laying-out and planting of flower-gardens; and as I am perfectly aware that the subject is one of general interest, I intend to give a few papers on flower-gardens, having, at least, one working plan, as the gardeners call it, in each. Perhaps it may be necessary to add, that when I say a working plan, I mean one with all the beds numbered, and with which a list of flowers with corresponding numbers is given, that the gardener may know exactly where each plant is to be. The idea once given, my readers may easily design flower-gardens for themselves, colouring the pattern to their fancy, and then filling the beds with flowers of the colour desired.

The first thing to be done in laying out a flower-garden, is to fix on a suitable situation. This may, perhaps, remind my readers of Mrs. Glasse's cookery receipt, beginning "First catch your hare;" but it is by no means so superfluous a direction. What I mean is, that there are many things to be considered in the situation of a flower-garden, besides its proximity to the house, and its being seen from the drawing-room windows; it involves, in fact, many apparent contradictions, for it should be sheltered from cold winds, and yet not under the shade of trees, and the soil should be deep and good, but yet not too rich, and it should neither be very moist nor very dry. If the garden be too much exposed, the keen winds of March will probably destroy all the beauty of the spring flowers; and if it be too much under the shade of trees, the plants will become drawn up and weak, and will very likely produce no flowers at all. Either a very

dry or a very poor soil will make the plants weak and stunted; and a very rich or a very moist one will make them produce more leaves than flowers. The situation having been chosen, the ground must be levelled, and the plan, if complicated, traced upon it, which is generally done by dividing the ground into a number of squares with sticks and packthread, placed at regular distances, so that the strings may intersect each at right angles, and then, having divided the plan into an equal number of squares by lines drawn on the paper, copying on a larger scale what is found in every square. This is difficult to describe; but it will be easy in practice, to any one who has been accustomed to copy in worsted work patterns drawn on Berlin paper. The straight lines are formed by putting two pieces of stick into the ground, at the points which are intended to be the extremities of the lines, and then chalking a piece of string drawn rather tight, and fastened to both. When the string is chalked, it is lifted up a little in the middle and let go suddenly, when the chalk which is thrown off by the vibration makes a perfectly straight white line on the ground. A circle is formed with a similar piece of string, having a stick tied to each end. One of the sticks is then fixed in the ground in the centre of the intended circle, and the other being drawn round, so as to mark the earth at the full length of the string, makes a perfect circle. Having thus said a few words on the modern practice of laying out flower-gardens, I shall lay before my readers an extract from a book published on the subject, nearly two hundred years ago.

"Fair houses are more frequent than fine gardens; the first effected by artificers only, the latter requiring more skill in the owner; few gardens being found well furnished out of the hands of an affectionate florist. The love of such a master will keep each tender plant alive his care and skill have collected; for never was any art or excellence liked or loved by the ignorant; it is knowledge that begets affection, and affection increaseth knowledge. Love was the inventor, and is still the maintainer of every noble science. It is chiefly that which hath made my flowers and trees to flourish, though planted in a barren desert, and hath brought me to the knowledge I now have in plants and planting; for, indeed, it is impossible for any man to have any considerable collection of noble plants to prosper, unless he love them: for neither the goodness of the soil, nor the advantage of the situation, will do it without the master's affection: it is that which animates and renders them strong and vigorous; without which they will languish and decay through neglect, and soon cease to do him service.

"I have seen many gardens of the new model, in the hands of unskilful persons, with good walls, walks, and grass plots; but in the most essential

adornment so deficient, that a green meadow is a more delightful object: there nature alone, without the aid of art, spreads her verdure carpets, spontaneously embroidered with many pretty plants and pleasing flowers, far more inviting than such an immured nothing. And as noble fountains, grottoes, statues, &c., are excellent ornaments and marks of magnificence; so all such dead works in gardens, ill done, are little better than blocks in the way to interrupt sight, but not at all to satisfy the understanding. A choice collection of living beauties, rare plants, flowers, and fruits, are indeed the wealth, glory, and delight of a garden, and the most absolute indications of the owner's ingenuity; whose skill and care is chiefly required in their choice, culture, and position."

The above is an extract from Ray's Flora, which was published in 1665, and was a very celebrated work on gardening in former times. I will now give my readers an extract from the American Gardener's Magazine for 1840, to show them the opinions entertained by an American on the same subject.

"The laying-out of a flower-knot, or system of beds in a flower-garden, is one of the first feats in which the young gardener undertakes to show off his abilities; and being one which affords the most ample scope for the play of fancy, is therefore, perhaps, the one in which he is most likely to manifest a display of bad taste. Even where the design is of the most happy conception, and the plotting beautiful upon paper, the difficulty of defining and preserving accurately the outline of the figure, when practically employed, will often quite destroy the anticipated effect. Edge-boards of wood, so thin as to be easily bent to the required form, are commonly the first material employed. These are soon warped out of shape, or quickly rot, and impart a deleterious principle to the soil in contact with them; and a very common fault is to have them too wide, so that the plants in the bed suffer from drought, while the paths between them resemble gutters more than walks for pleasure. Bricks, or tiles moulded expressly for the purpose, are next resorted to, and if sunk, so that the earth in the beds shall not be more than from one to two inches above the level of the paths, they serve pretty well for some time. But so soon as they begin to crumble from the influence of frost, or are covered with green mould or moss, as they soon will be in moist or shady exposures, they become offensive to the eye, though not, like the first, injurious to the soil. A living margin, therefore, becomes the next and last expedient: and, indeed, it may be regarded as one of the last steps in the march of horticultural refinement. To adapt such a line of vegetation to the size and form of the bed, and make it harmonise in every point of reference with the group of plants within, requires a cultivated delicacy

of perception and fine judgment, and an accurate knowledge of all the principles of natural and gardenesque beauty, as well as of the characters of the plants, or materials which are necessary, with a due arrangement, to produce it.

"It is probably as difficult to fix upon the most suitable plant for the edging of a flower-bed, as it is to determine the best shrub for a hedge around fields. For the borders of main avenues, or broad walks in grounds of considerable extent, box is undoubtedly the best; but for small parterres, or the flower-beds in a front-door yard, it seems much less suitable. They can commonly be taken in at one glance of the eye, and, notwithstanding all that has been said of the artificial or geometric style, it is the proper one for such places; for symmetry, or a perfect balance of corresponding parts, greatly strengthens the impression of such a scene, taken as a whole, or single mass of objects. The beds, therefore, will not only be small, but when there is the proper variety in the form of them, some, at least, must have quite acute angles. Box, if thrifty (and, sickly, it would be an eyesore anywhere), soon takes up too much space in breadth; it becomes a harbour for slugs and other noxious vermin; and its numerous greedy fibrous roots so exhaust the soil, that no bulbous or other flowering plants, which are the primary objects in such situations, can flourish within a considerable distance. To be kept within the proper dimensions, both as to height and breadth, it requires frequent clipping, and for some time after that operation it presents a raw, stiff, and unpleasant aspect; though, to be sure, after the new growth has concealed the cut extremities, it will present a most charming line of verdure. Box is, moreover, apt to be winter-killed at the north, and summer-killed at the south; and it will also not unfrequently die off in some places without any obvious cause, leaving unsightly gaps, which it is impossible, or requires a long time, perfectly to fill. Dwarf Iris, Hyssop, some species of Phlox, Stonecrop, and even a few kinds of grass, are, for a time, exceedingly pretty; but they soon spread too much laterally, while, from pressure, or old age, or exhaustion of the soil, they die away in the middle of the line.

"Certain sorts of bulbous roots, such as the crocus, jonquil, and other narcissi, hyacinths, and the like, with their brilliant flowers and lively foliage, leave nothing further to be desired while they last, which is but for a brief space in the spring; and we can only supply their place by a row of some annual, such as Chinese pinks, sweet alyssum, candytuft, &c., which, in their turns, must give way to Chinasters. And, upon the whole, perhaps no single plant whatever can fulfil all the requisite conditions, viz., a narrow and low line of perpetual greens, diversified with flowers, to delight us with the contrast of their colours or the deliciousness of their

perfume. A new charm would be added, if we could procure a successive variety of these; for what is likely to meet the eye several times every day, for months together, will soon lose its effects from monotony. We must, therefore, have recourse to a combination of several kinds, which will vegetate and flower in succession, without interfering with each other, upon the same ground.

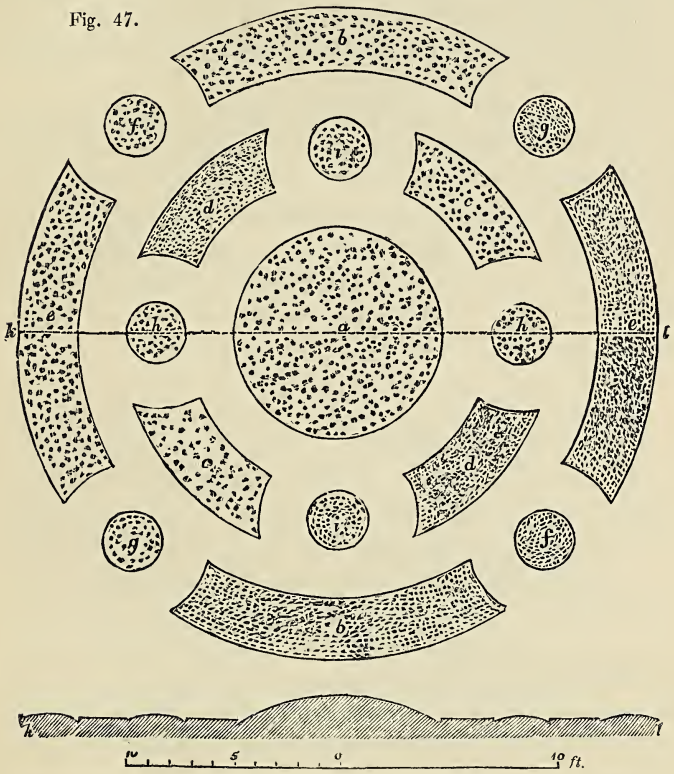
"A few years ago, I commenced the trial of a plan, which has succeeded so well thus far, that I now recommend it to the attention of others, especially to those of the middle and southern states; while an analogous course, with more hardy plants, may succeed better at the north, though, I think, with the protection of a bed of leaves, the same would withstand the winter, in the vicinity of Boston. I planted in the same line, and so close as almost to touch each other, one bulb of each repeatedly; three kinds of Amaryllidaceæ, of nearly the same habit, and which multiply, by offsets, so fast, that they can be easily obtained in sufficient quantity, viz., *Zephyránthes Atamasco*, *Z. rosea*, and *Sternbèrgia lutea*. Early the next spring, my row of *Atamasco* flowers, of the most brilliant white, changing to pink, was the admiration of every passer-by. They continued to push forth for several weeks, and, for a considerable time after, their leaves formed as fine a margin of green as one could wish to see. These leaves had scarcely begun to die away, when the flowers of the *rosea* began to appear, and kept flowering nearly all summer. The leaves lasted till late in the fall, when the crocus-like golden flowers of the *Sternbérgia* took their place, and had a doubly cheerful effect from all the adjacent vegetation having fallen into 'the sere and yellow leaf.' These flowers, it is true, were more transient than the others, continuing, perhaps, for eight or ten days; but they were immediately followed by their peculiarly rich green leaves, which preserved the border fresh and perfect, till the *Atamasco* appeared again. The second year, the edging was very much more beautiful, from the flowering bulbs having increased three-fold. How long they can be permitted to remain without being dug up and reset, I know not yet, probably from three to five or six years; but if it were required to be done every year, it would be well worth the trouble; at any rate, I know of no better way of obtaining the combined grand desiderata in an edging for flower-beds, viz., humble growth, perpetual greenness, and variety in the colour of a succession of flowers. I only regret that I cannot say much about their perfume."

Having now said what my readers will probably deem quite sufficient on the theory of the subject, I will proceed to the practical part, by laying before them the working plan of a garden, which, though not original,

has the advantage of having been proved; as it has been found, during the experience of several years, never to fail in producing the desired effect.

This garden is placed in a recess of the shrubbery, but it would succeed equally well on a lawn, and the exterior bed is surrounded by turf, no part of which is narrower than five feet, beyond which is a border of low American shrubs. The central mass, ten feet in diameter (*fig.* 47), contains

Fig. 47.



PLAN OF A CIRCULAR FLOWER-GARDEN.

a collection of China roses, including *R. semperflorens* (the common China), *R. sanguìnea* (the dark-crimson China), and all the varieties of *R. Noisettiana* (the Noisette); the interstices being planted with a mixed collection of bulbs. There is a standard crimson Noisette rose in the centre, and the marginal line is of mixed hyacinths.

The other beds are planted with herbaceous plants, bulbs, and showy greenhouse plants, in the following manner :—

b, Red-flowering herbaceous plants and red-flowering bulbs; the border of Aimable Rosette hyacinths.

c, White-flowering herbaceous plants and white-flowering bulbs; the border of white crocuses.

d, Blue-flowering herbaceous plants and blue-flowering bulbs; bordered by blue or purple crocuses.

e, Yellow-flowering herbaceous plants and yellow-flowering bulbs; bordered with yellow crocuses.

f, Variegated horse-shoe geraniums, alternating with mixed hyacinths, and bordered with mixed crocuses.

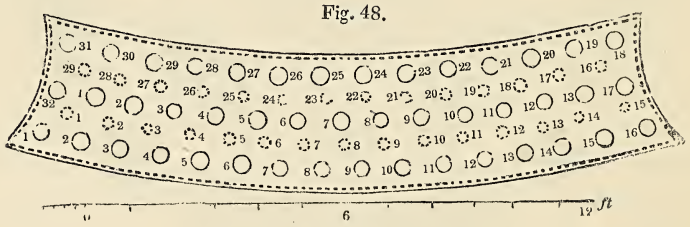
g, Variegated ivy-leaved geraniums, alternating with mixed tulips, and bordered with mixed crocuses.

h, *Fuchsia globosa*, or any favourite tender annual or greenhouse plant, alternating with mixed Narcissi, bordered with mixed dog-tooth violets.

i, *Heliotropes*, or other favourite tender annual or greenhouse plants, alternating with mixed *Iris Xiphium*, and bordered with mixed *Scílla vérna* and *bifòlia*; the latter in its blue, white, and red varieties.

The beds are raised a little in the centre, as is shown by the section *k*, *l*, in *fig.* 47.

Fig. 48.



WORKING PLAN OF ONE OF THE BEDS, *b*.

The details of one bed, that for the red-flowered plants, marked *b* in the general plan, are given (*fig.* 48) as a specimen of the manner in which the beds are planted with herbaceous plants, alternating with bulbs, and bordered with bulbs.

PERENNIAL AND ANNUAL PLANTS WITH RED OR PURPLISH FLOWERS: EQUAL NUMBERS FLOWERING IN APRIL, MAY, JUNE, JULY, AUGUST, AND SEPTEMBER, TILL DESTROYED BY FROST.

§ i. OUTSIDE ROW; HEIGHT OF THE PLANTS FROM SIX INCHES TO EIGHTEEN INCHES.

1. *Phlóx subulàta*, April.
2. *Lýchnis læta*, May.
3. *Antirrhinum majus* (the snap-dragon), June.
4. *Phlóx amœna*, May to July.
5. *Pentstèmon angustifòlius*, August.
6. *Aster salicifòlius* (red Michaelmas daisy), September and October.
7. *Verbèna Tweediàna*, pegged down, April.
8. *Aquilègia canadénsis* (Canadian Columbine), May.
9. *Betonica grandiflòra*, June.
10. *Chelòne barbàta*, July.
11. *Epilòbium angustissimum* (French willow herb), August.

12. *Lobèlia fúlgens*, September and October.
13. *Cortùsa Mathiòli*, April.
14. *Pentstèmon Richardsòni*, May.
15. *Diánthus caucásicus* (Russian pink), June.
16. *Physostègia speciòsa*, July.
17. *Málva moschàta*, August.
18. *A'ster vimíneus*, September and October.
19. *Phlóx verna*, April.
20. *Phlóx setacea*, May.
21. *Geràmium Wallichiànum*, June.
22. *Verbèna Melíndres latifòlia*, June and July.
23. *Státice oleifòlia*, August.
24. *Epilòbium latifolium*, September and October.
25. *Hepática tríloba* (red, single and double), February and March.
26. *Lýchnis coronàta*, May.
27. *Phlóx Drummondi*, June.
28. *Pelunia phœnicea*, pegged down, July.
29. *Gentiàna incarnàta*, September and October.
30. *Primula sinensis*, February and March.
31. *Pulmonària officinalis*, May.

§ ii. MIDDLE ROW; HEIGHT FROM EIGHTEEN INCHES TO TWO FEET SIX INCHES.

1. *Linum hypericifolium*, April.
2. *Geranium anemonefòlium*, May.
3. *Calamíntha grandiflòra*, June.
4. *Láthyrus grandiflòrus* (large-flowered pea), July.
5. *Phlóx undulàta*, August.
6. *Stèvia purpùrea*, October.
7. *Dodecàtheon Meádia* (American cowslip), April.
8. *Valeriàna rùbra*, May.
9. *Dictámnus rùber* (Fraxinella), June.
10. *Chelòne barbàta*, July.
11. *Althæa rósea* (Hollyhock), August.
12. *Lobèlia Tùpa*, September and October.
13. *Papàver bracteàtum* (large red poppy), June.

2. BULBS FOR THE INTERMEDIATE ROWS.

1. *Trichonèma Bulbocòdium*, March.
2. *Claytònia caroliniàna*, April.
3. *Trillium erythrocarpum*, May.
4. *Lílium chalcedónicum*, June.
5. *A'llium rubéllum*, July.
6. *Cólchicum autumnàle*, August and September.
7. *Cýclamen còum* (Italian cyclamen), March.
8. *A'llium amoènum*, April.
9. *Lílium cóncolor*, May.
10. *Gladiòlus byzantinus*, June.
11. *Tùlipa montàna*, July.
12. *A'llium glòbòsum*, August and September.
13. *Scílla bifòlia*, var. *rubra*, March.
14. *A'llium incarnatum*, April.
15. *Arethùsa bulbòsa*, May.
16. *Lílium Pomponum*, June.
17. *Gladiolis cardinàlis*, July.
18. *A'llium serótinum*, August and September.
19. *Scilla non scripta fl. rubro*, March.
20. *Fritillària latifòlia*, April.
21. *Lílium aurantiacum*, May.
22. *A'llium Pallasii*, June.
23. *Zephyránthes rósea*, July.
24. *Colchicum arenàrium*, August and September.
25. *Lílium andìnum*, July.
26. *Fritillària meleàgris*, June.
27. *A'llium pulchéllum*, July.

ROW ROUND THE MARGIN.

Hyacínthus orientàlis, var. *Aimable Rosette.*

It will be observed, that the above list contains only the red, pink, or purplish crimson flowers, necessary to fill the beds (*b b* in *fig.* 47), and that they may be varied at pleasure. Thus the annuals (such as *Phlox Drummondi* and *Lychnis læta*) may be omitted, and perennial plants substituted; or other annuals, or biennials, such as the Chinese pink, which is very pretty, may be admitted. If the situation should be too cold for the Chinese primrose to flower in the open air, the red hepatica, the red daisy, or the double-flowered red or lilac primrose, may be substituted. If the untidy appearance of the leaves of the bulbs after they have done flowering be objected to, they may be omitted, and the other

plants allowed to spread a little, so as to make the bed look sufficiently full, without being crowded. In short, my readers can vary the plants as they please, and as taste may dictate; and they will find it an amusement to mark down any plant that they may see in flower which they think will suit their beds.

It must be observed, that the season of flowering of the different plants is taken from the neighbourhood of London in a favourable season, and that in colder climates or unfavourable seasons they will be later. The beds must be forked over every spring, and part of an old hotbed laid over the roots of the roses. Roses require frequent manuring, if it is wished to have them fine; but it should always be laid on the surface, and it should always be in a thoroughly decayed and rotten state, before it is used.

I have not given any list for the plants in the other beds, that my readers may amuse themselves in selecting them; and have only to add, that the small beds *f*, *g*, *h*, and *i*, may be planted with Petunias, or Verbenas, or with dwarf Dahlias, pegged down, instead of Geraniums, if preferred.

ON THE CULTIVATION OF THE DOUBLE DAISY (*BELLIS PERENNIS*).

BY MR. GORNER.

The Double Daisy may be reckoned among the most ornamental of flowers, particularly among those the best adapted for edgings. When the advances it has made in cultivation, and those it is still capable of making, are contemplated, every cultivator must certainly be tempted to add it to the number of his floral beauties. It is but a short time since that only three or four kinds were known, and now I myself cultivate twenty varieties, all of which I have raised, and which in colour, size, form, and shade, differ from their progenitors. It may be seen from this, that if the cultivation of this plant is continued, a much greater degree of perfection may be attained, and particularly if cultivators will raise them from seed. I have sent my seeds to many of the largest gardening establishments, so that they will soon be known in the trade.

It is more difficult to obtain the seed of the daisy than that of any other plant, which is probably the reason that its cultivation has made so little progress. The double daisy produces very little seed, and falls very easily out, so that the plant very frequently sows itself, and new sorts spring up around it, and if you are very anxious to obtain seed, it should be collected from these. To effect this, I take off the flowers

as soon as they have done flowering, that is to say, as soon as the florets fall off when they are touched, and I keep them till all the others are in an equally fit state for collecting. I then lay all the collected seed in a shady, dry place, and after they are more maturely ripened I put them in the ground. I have raised most plants from seed sown in pots and placed in a shady situation. Much seed cannot be obtained even with the greatest attention, and a great number of gathered flowers do not produce more than ten well-ripened seeds at most.

I raised last autumn, from thirty seedlings, fourteen simple, three half-double, five monstrosities, and eight double; among which were four new very beautiful varieties, which I considered worthy of being added to my list, from which I excluded many others. I have again a great number of seedlings this autumn, and I expect from them another supply of new sorts. It is the same with the daisy as with many other kinds of flowers, viz. the more double and perfect the flower is, the finer and better is the seed produced from it.

With respect to colour, my varieties consist of the most complete gradations from white to dark red. The construction of the flower is of three kinds, viz., those with flat, piped, and half-piped florets; and each of these divisions contains most beautiful flowers, but the two first claim the preference. Each division has flowers of one colour, and those which are shaded. The piped are more half-globular, and the shaded have shades of pale and deep red at the points. Some of the daisies flower almost all the year through, and in autumn make quite a display. Some of them are very large, and when they are regularly-formed varieties, they have sometimes a thousand flowers.

Cultivated daisies are particularly desirable, on account of their great variety; because by this means the most beautiful edgings can be given to the flower-garden. It is true that florists have established the principle, that flowering edgings should be all of one colour, and that various-coloured flowers in a bed alone are beautiful. But a regularly-varied edging of different-coloured flowers is much to be preferred to those that are but of one colour: such as the *Hepatica triloba*, when planted regularly with red, blue and white, has a very splendid appearance; and the same is the case with the daisy. It will be found that the most beautiful coloured varieties, regularly planted, produce a most splendid border.

Varieties of the daisy have also a very fine effect when they are arranged according to their colour in beds or in groups on the turf; and mathematical æsthetical figures are the best suited for this purpose. They form truly a striking feature of the garden when well arranged; and they

have the advantage of bearing transplanting without injury at any season of the year, though the best time is after they have done flowering. If I can but inspire others with the same enthusiasm that I feel myself, I am sure some most beautiful plants might be raised.

April 28th, 1841.

REMARKS ON THE CULTIVATION OF THE RHODANTHE MANGLESII.

BY MR. C. RICHTER.

This comparatively new and extremely ornamental and beautiful plant is always classed among those that require particular care in their cultivation, and the repeated trials that have been made of it confirm the assertion.

The treatment, however, which I have adopted with this beautiful plant, proves that it is not by nature so particularly delicate. Allow me, therefore, to give you some account of my method of raising it, which for three years has been attended with the utmost success.

In order to prolong the enjoyment of seeing the Rhodanthe in flower longer than usual, I generally sow it three times a year; the first in the beginning of March, and afterwards in the middle of April, and in May. I sow the seeds in shallow, moderately-sized pots, about an inch and a half high, two, three, or four inches broad, and filled with an equal proportion of sandy peat and leaf-mould. I put in the seeds about an inch apart from each other in a circle round the pot, and not far from the margin. I then cover them with very sandy peat about a line in thickness, or with river or white pit sand; and I next give them a gentle watering with a watering-pot that has a fine rose, so that the mould may become set and be sufficiently moist. I put the pots containing the two first sowings in tan in a hotbed, or, what is better, in fir sawdust. This is not so necessary with the last sowing, and the pots may then be placed in a hotbed that has been already used. The seed will germinate in ten or fourteen days, when they should be kept in the shade and moderately watered; and after the cotyledons appear, which require some time till they are perfectly formed, the watering should be continued, the pot always being in the shade; and when the weather is mild, fresh air should be admitted every day, as it greatly contributes to strengthen the plants.

As soon as one or two leaves have been unfolded above the cotyledons (according to the strength or weakness of the individual), these small plants should be removed with the greatest care to other pots filled with the

above-mentioned mixture, to which should be added a proportion of charcoal ashes, having previously put in a layer of potsherds about an inch deep. The pots should be about three inches high, and the same in width. One plant should be placed in each pot, and the greatest care should be taken not to injure the roots. They should then be well watered, and set in a moderately warm hotbed to strike root more freely. They require no air at first, only the necessary shade, and not too much water. They will have taken root so well in six or eight days, that air may be admitted, and increased by degrees according to their strength; and which must also be regulated according to the external temperature, particularly as it regards those of the first sowing. A shade must be kept over them when the weather is fine and clear, so that they may not be burnt up by the sun; and they should have but a small admission of the open air, to prevent the earth in the pots from being too much dried up.

The plants when treated in this manner will soon become strong and show flower-buds, when a freer admission of air and increased watering should be given. The latter need not be spared, as when the plants are strong they can bear a considerable degree of moisture. Shade should be given in fine weather during the hottest hours of the day; that is, from ten to three. It is frequently warm during the nights in May, in which the thermometer never sinks lower than fifty or fifty-five degrees; and in such cases air should be admitted, which is also a powerful agent in giving strength and vigour to the plants.

In June, when no night frosts are apprehended, the pots should be taken out of the hotbeds, and set in a situation sheltered from the wind, and protected by a covering from continued or heavy rains, or from the burning sun. The latter, indeed, is particularly necessary, because the plants cannot stand the sun; if indeed the pots are exposed to it, so as to become heated from its warmth, the tender roots are burnt, and this, especially if followed by a copious watering, is attended by the most injurious consequences.

The plants of the first sowing begin to flower in the month of June, and continue flowering till autumn. Those of the second or third sowing are in flower in winter, and greatly contribute to ornament the greenhouse at that season; they even continue flowering almost the whole winter through when in a temperature of fifty or fifty-five degrees, and sufficient fresh air is admitted from the glass above. Even the latest buds unfold themselves tolerably well.

The plants of the two first sowings produce the best ripe seed, because that of the last sowing is ripe too late in the autumn to be fit for growing on account of the coldness of the external temperature in the day, and par-

ticularly during the night; but seed ripens best in the open air, and when under glass but few seeds set, and still fewer are properly ripened.

I do not think it advisable, however, to take the Rhodanthe out of the pot and plant it in the open ground, as it cannot well be protected from heavy rains and the burning sun, which is absolutely necessary with all tender plants.

Feb. 20, 1841.

ON FLOWER-POTS.

BY THE EDITOR.

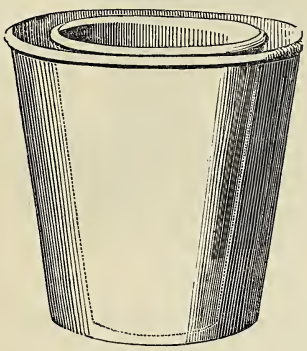
In giving directions for the treatment of the different kinds of greenhouse plants, it is frequently necessary to mention flower-pots of different sizes; and several of my readers have written to ask me the dimensions of the pots which gardeners in the neighbourhood of London call sixties, &c. To explain this, it must be understood that the potters take a certain quantity of clay, which they call a cast, and that the pots are numbered according to the number made of them from one cast. Potters always charge the same price for a cast, whether it consists of two pots or of eighty.

There are several different kinds of pots which are not included in the ordinary numbers; but of the common flower-pot, which, as my readers probably know, is a cylindrical, tapering vessel of burnt clay, with a perforated bottom, there are eleven common sorts, distinguished by their sizes, thus: the first size has two pots to the cast, which are called twos, and which are eighteen inches in diameter and twelve inches deep; the second size has four to the cast, which are called fours, being twelve inches in diameter and ten inches deep; the third size has six to the cast, which are called sixes, being nine inches in diameter and eight inches deep; the fourth size has eight to the cast, which are called eights, being eight inches in diameter and seven inches deep; the fifth size has twelve to the cast, which are called twelves, being seven inches in diameter and six inches deep; the sixth size has sixteen to the cast, which are called sixteens, being six inches in diameter and seven inches deep; the seventh size has twenty-four to the cast, which are called twenty-fours, being five inches in diameter and six inches deep; the eighth size has thirty-two to the cast, which are called thirty-twos, being four inches in diameter and five inches deep; the ninth size has forty-eight to the cast, which are called forty-eights, being three inches in diameter and four inches deep; the tenth size has sixty to the cast, which are called sixties, being two inches in diameter and two and a half inches deep; the eleventh size has

eighty to the cast, which are called thumbs, and are one and a half inches in diameter and two inches deep.

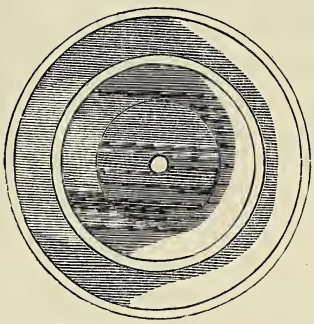
The other kinds of flower-pot are the store-pot, which is broad and flat-bottomed, and is used for striking cuttings, or raising seedlings in; the bulb-pot, which is narrower and deeper than usual; the aquatic pot, which has no holes in the bottom or sides; the pot for marsh plants, which has three or four small holes in the sides, about one-third of the depth from its bottom, this depth being filled with gravel, and the

Fig. 49.



DOUBLE FLOWER-POT.

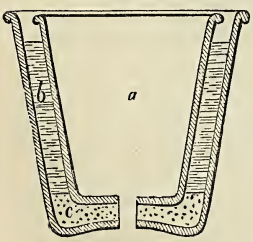
Fig. 50.



PLAN OF DOUBLE FLOWER-POT.

remainder with soil, and the pot plunged in a deep saucer, kept full of water; and the double pot (*figs.* 49 and 50), which is used for plants in

Fig. 51.



TWO FLOWER-POTS JOINED WITH CEMENT.

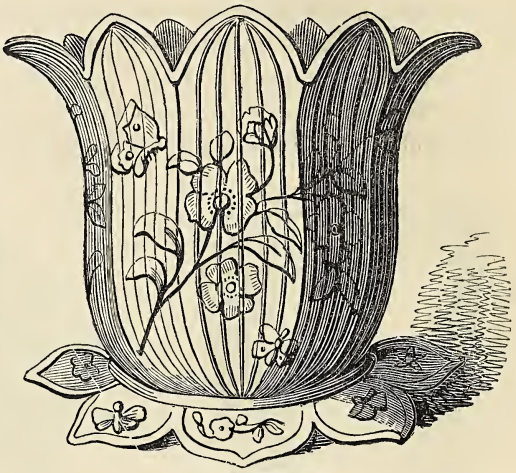
Fig. 52.

LANDSCAPE FLOWER-POT.

balconies, and which may be imitated by one pot being placed within another, and the two joined together with cement (see *fig.* 51); the interstices in both cases being filled with moss.

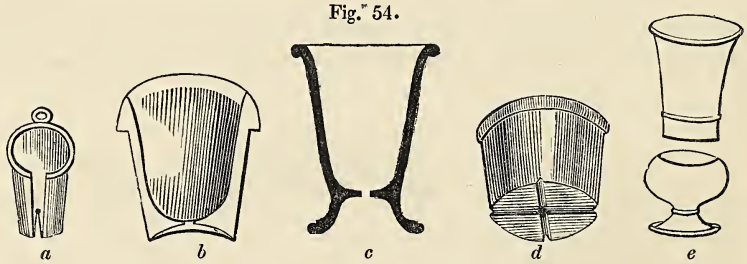
Besides these, ornamental china flower-pots have been constructed, in which the saucer is completely disguised, as shown in *figs.* 52 and 53, the engravings of which were lent to me by my kind friend, Captain Mangles; and in the vase flower-pot (*e* in *fig.* 54), manufactured of red earth at Derby, and which is not more expensive than the common kinds. There are also propagating pots (*a* in *fig.* 54), for hanging round a branch of a tree; pots with a raised bottom to prevent the entrance of worms (*b* and *c*); and channelled pots (*d*), to facilitate the escape of superfluous moisture.

Fig. 53.



TULIP FLOWER-POT.

Fig. 54.



a *b* *c* *d* *e*

ON THE EARTH-WORM.

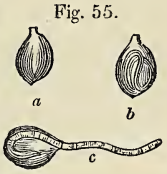
BY THE EDITOR.

The common earth-worm (*Lumbricus terrestris*) has a long cylindrical body, composed of a hundred, or a hundred and fifty rings, by which it has the power of contracting its body at pleasure. Its head is only distinguished by being narrower and more pointed; and it has neither eyes nor horns. About thirty-two rings from the head there is a kind of protuberance, which forms a belt round the body, from six to nine rings broad. Every ring of the body is furnished with eight short spines or

bristles, placed in pairs, and so small as scarcely to be visible without a magnifying glass, but which are of the greatest service to the worm in aiding its motion. Worms are very sensitive to heat and cold, and they avoid the extremes of both by burrowing three or four feet deep in the ground. They enjoy moisture, and come to the surface in great numbers when it rains.

The worms swallow the earth which they remove in making their burrows, and they are supposed to live on the decayed organic remains mixed with it, rejecting the earth itself, which they throw up on the surface in what are called worm-casts; the smooth round form of which shows the shape the earth took in the worm's body. Some suppose that the leaves, bits of grass, and other similar objects which the worms draw into the holes with them are for the sake of food; but others think they have merely adhered to the slime, and being dragged by the worm along the surface of the ground, were left behind when the creature entered its hole. The earth-worm lays eggs (*fig.* 55, *a*), which are so transparent that the young worm can be seen in them (*b*). When they are hatched, the young worm (*c*) slowly uncoils itself. Sometimes the young are produced alive, without being enclosed in eggs.

Fig. 55.



REVIEWS.

The Botanical Magazine for May contains—

Crocus annulatus, var. *Adamicus* (t. 3868). A pretty variety of Crocus annulatus, sent to Mr. Herbert by Monsieur Gay, of Paris, so well known for the great care and attention he has bestowed on the genus Crocus.

Crocus lagenæflorus, var. *lacteus lutescens* (t. 3869). A pale-yellow variety of the Gourd Crocus.

Hæmanthus tenuiflorus, var. *Mozambicensis* (t. 3870). A very beautiful variety of Hæmanthus, possessing, what is so rarely found in the genus, elegance and beauty. It is a stove plant, and should be grown in pounded brick rubbish, mixed with a little light loam, keeping the round bulb above the ground.

Bomarea acutifolia, var. *punctata* (t. 3871). A native of the Caraccas; introduced in 1838. The genus has been divided from *Alstrœmeria*.

Sprekelia cybister (t. 3872). A very curious plant, nearly allied to the Jacobean lily, a variety of which was figured last year in the Bot. Reg.

Elisena longipetala (t. 3873). A Peruvian bulb with white flowers, nearly allied to Ismene.

All the plates in the present number are of bulbs, with descriptions by Mr. Herbert; and all, of them, I believe, have never been figured before. The crocuses are, however, very slight variations from those already in cultivation.

The Botanical Register for May contains—

Lælia acuminata, (t. 24). A very beautiful orchideous plant.

Cobœa stipularis (t. 25). The flowers are smaller than those of the common Cobœa, and of a greenish-yellow: they are, however, very handsome. It flowers best in the shade; and it may be easily propagated by seeds sown on a hotbed in March, or from cuttings, which strike freely.

Posoqueria versicolor (t. 26). The long slender flowers of this curious plant are first crimson, afterwards pink, and lastly white. It is a native of Cuba, introduced in 1839, and it requires a stove in England.

Impatiens rosea (t. 27). Another beautiful half-hardy species of Impatiens from the Himalayas.

Æschynanthus maculatus (t. 28). A new species of this curious genus of plants, of which there are many kinds now in the gardens differing slightly from each other. They all require a stove with a damp atmosphere, and they strike freely from cuttings.

Cœlogyne Cummingii (t. 29). An orchideous plant from India, with white and yellow flowers.

All these plants are new.

Paxton's Magazine of Botany for May contains—

Ipomœa tyrianthina. A very splendid purple Ipomœa, with flowers deep as the Tyrian dye; whence the name. It is a native of Mexico, and requires a greenhouse, where it will flower from August to November.

Lophospermum erubescens, var. *spectabile*. This showy plant is now in flower at Mr. Henderson's nursery, Pine Apple-place, Edgeware-road: the flowers are pink, spotted with white.

Allamanda cathartica. A splendid stove climber, with large bright yellow flowers. It is an old plant, but a very beautiful one.

Epiphyllum truncatum, var. *violaceum*. A pretty and free-flowering plant, well deserving a place in collections of Cacti.

All these plants are new except the Allamanda; and all the plates are very beautifully drawn and coloured.

The Botanist contains—

Begonia Dregii. No. 217. A small-flowered Begonia, from the Cape.

Malva odorata. No. 218. A shrubby Mallow, twelve feet high, with fragrant pink flowers.

Aquilegia glandulosa. No. 219. A showy purple and white Columbine, a native of Siberia, lately introduced.

Russelia juncea. No. 220. A rush-like plant, with tubular scarlet flowers, very common in greenhouses from the easiness of its culture, the rapidity of its growth, and the profusion of its flowers.

Of these the Begonia has not been figured before.

In The Botanic Garden are figured—

Verbena teucroides. No. 785. The white Verbena which was so much talked of a year or two ago, but which is now found of very little value, from the coarseness of its habit of growth.

Blitum virgatum. No. 786. This plant, the English name of which is strawberry blight, was common in gardens even so late as the middle of the last century; but it is now seldom grown, its place being supplied by so many newer and more beautiful flowers.

Malva lateritia. No. 787. This plant was introduced a few years since by Mr. Tweedie from Buenos Ayres. The flowers are of a dingy red, and of no great beauty. It was before figured in the Bot. Mag.

Orchis foliosa. No. 788. A very handsome half-hardy Orchis, with purple flowers. It was introduced in 1823, and its botanical name is now changed to Habenaria alata.

All these plants have been figured before.

QUERIES AND ANSWERS.

WALL PLANTS.

Can you tell me what plants will grow on walls? I have a ruin in my grounds which I wish to decorate with flowers which will have a natural appearance.

Lockerby,
May 5th, 1841.

One of the best and most natural plants for walls is the wallflower, which takes its name from its habit of growth. The wallcress (*Arabis*), several species; *Alyssum saxatile*; *Fumaria*, several species; *Draba verna*, or whitlow grass; *Erysimum barbarea* (the yellow rocket); all the kinds of *Cistus* and *Helianthemum*; the wild pink, or rather carnation (*Dianthus*

Caryophyllus); *Cerastium vulgatum;* the wild snapdragon; the dyer's weld, or wild mignonette, and the rosemary, may also be grown on the tops of walls; and those beautiful little plants, *Erinus Alpinus*, and *Antirrhinum Cymbalaria*, sometimes called the wandering sailor, may be inserted in the crevices between the bricks.

CARNATIONS.

What is the best method of growing carnations?

May 5th, 1841.

In answer to this, I think I cannot do better than quote the opinion of one of the first carnation-growers in Scotland, as given in the "Caledonian Memoirs."

"The carnation (*Dianthus Caryophyllus flore pleno*) consists of several varieties, which florists distinguish by the names of Flakes, Bizarres, and Picotees. All of these will grow in any soil or situation, and are easily propagated by layers and cuttings; but it is observed when they are kept long on the same ground, they frequently run, from a fine striped and variegated, to a self, or plain red colour: therefore, to keep up a good stock of these flowers, recourse must be had to sowing seed; but as the carnation flowers late in the season, it is very seldom ripe seeds can be obtained in the open air in this country.

"My practice therefore is, when the plants are in flower, to select what I consider the best; that is, such as have fine long regular pods, not inclining much to burst, with rose-leaved petals, and good colours, rather light than otherwise, or having more white than red. The layers of these I take off at the usual time, put in small pots, and shelter them in a hotbed-frame during the winter. In the month of March, I put them in pots about one foot in diameter; having previously prepared a compost, which consists of a pretty light-coloured loam, with a third vegetable mould of rotten tree-leaves, and a small quantity of river-sand. They are again placed in some sheltered situation, till the month of June, when they are placed on the stage in the greenhouse. As soon as the flowers expand, if they are much crowded with leaves, I pull out a few to give room to the seed-pod to swell; and whenever the flower begins to fade, I pull out the whole of the petals, without hurting the styles or horns that proceed from the point of the seed-pod. I often find it of great advantage to slit down one side of the calyx, to drain out any moisture that may lodge in the bottom of the cup, which would soon damp and rot the pod; it is likewise very useful to cut away about one-third of the calyx, to encourage the swelling pods. The seeds are known

to be ripe when the pods become a little brown and hard. They are then cut as they ripen, and hung up in a dry place till near the time of sowing, which is in May. I sow the seeds in a frame, without any bottom-heat; and when the plants are sufficiently up, I take away the glass, and throw a net over them, to keep the birds from pulling them out. If they come up too thick, I transplant them into another bed, where they continue till they are planted out for good. I may observe, that some of them are longer in coming up than others, and are also very weak and small. These I nurse in pots, as I frequently find them turn out the very best sorts, although they sometimes do not flower till the third season.

"I have only to add, that every one has not the conveniency of a good greenhouse; but there are few places where there is not either a greenhouse, hothouse, or hotbed frame, any of which will be found very useful to ripen carnation seed."—*Mem. Cal. Hort. Soc.*, vol. i. p. 397.

EVERGREENS FOR HIDING A WALL.

Madam,—I am just now laying out a small piece of garden-ground, near London, after a plan in the Suburban Gardener, and I should feel very grateful if you would, through the medium of your valuable Magazine, give me a list of good showy evergreens. Having a wall at the end of the garden, I wish to hide it entirely, winter and summer, by raising a large bed and covering it with evergreen shrubs; if you could instruct me how to mix them, so as to form the greatest variety of foliage, you would still further oblige me. I also want a list of luxuriant climbers, both evergreen and annuals, and a list of showy flowers for the parterres and for filling vases; as there are so many hundreds in the same situation as myself, I think your readers would feel equally obliged as your obedient servant, A Constant Reader.

Stoke Newington.

P. S. What is the best soil for the common sorts of evergreens, and what for the Cypress?

In the case mentioned, I should recommend first covering the wall in question with ivy, so that if a glimpse of it should appear through the trees, it may harmonise with the rest. Hollies may then be planted at suitable distances to allow them to spread at the base; as trees should never be planted near together when they are wanted for a screen. Dark, smooth-leaved varieties of the common kind, are better than those with prickly or variegated leaves. Next to the hollies may be planted some bushes of *Arbutus* and *Phillyrea*. All these are plants with dark

foliage, and they should be planted in quincunx, that is, so as to form diamonds, in order to show the grass between, and thus by exciting the imagination, as to other trees and grass beyond, effectually to disguise the boundary. Alternately with the *Phillyreas* and *Arbutus*, but in advance of them, may be planted box-trees, intermixed with shrubs with light-coloured foliage, such as the *Aucuba japonica*, gold and silver hollies, &c.; but these should always have a dark-coloured tree for a background, as the light colour catches the eye; and when a dark shade is perceived beyond it, the mind immediately conceives the idea of distance. In front of these may be planted flowering shrubs, such as the *Laurestinus*; the yellow and white broom; the spring and autumn flowering *Mezereons*, and *Daphne collina*, *D. neapolitana*, &c.; the ash barberries, (*Mahonia aquifolium*, &c.); the Nepal barberries (*Berberis Asiatica* and *B. dealbata*); different kinds of heath, *Gaultheria Shallon*, the *Kalmias* and *Rhododendrons*, the double-blossomed furze, and *Garrya elliptica*. Among the flowering trees may be reckoned the different kinds of *Cratægus*, all of which are very ornamental both in flowers and fruit. Of all the kinds of *C. Oxyacanthus*, the common hawthorn, the handsomest is *C. O. obtusata*, sometimes called *C. Oxyacanthoides*; this species is now (May 13th) so completely covered with flowers, in Kensington-gardens, that neither the branches nor the leaves can be seen. Where the situation is sheltered, *Buxus balearica* may be substituted for the common box; and *Ilex opaca*, and *I. maderensis*, for the common holly. An evergreen *Magnolia* or two may also be introduced; but this is not advisable unless the situation be warm, as, though it will live in a cold situation, it is not at all ornamental unless it thrives. An Almond and a *Magnolia conspicua*, both of which flower early in April before their leaves expand, will look very well backed by the evergreens; and they may be accompanied by a double-blossomed peach, and a double-blossomed cherry, which will flower early in May, and a few standard roses for June.

The best evergreen climbers are the common ivy (*Hedera Helix*), and the giant or Irish ivy (*H. canariensis*), with their numerous varieties; the evergreen honeysuckles (*Lonicera japonica* or *flexuosa*, and *L. sempervirens*); *Smilax aspera* and *S. hastata*; *Bignonia capreolata*; *Berchemia volubilis*, and the periwinkle (*Vinca major*) with its varieties.

The best annual climbers are *Cobœa scandens*, *Eccremocarpus* or *Calampelis scabra*, *Lophospermum erubescens*, *Maurandya Barclayana*, and all the *Petunias*. All these, though they may be considered as annuals, flower best when sown in autumn, and kept during winter in a frame or greenhouse, to plant out in spring.

For a list of showy flowers for parterres, I may refer to No. IV.,

p. 124 and 127; and for vases, nothing looks better than the *Fuchsias*. *F. globosa* is the hardiest and most abundant flowerer of the whole genus; and some splendid hybrids have been raised between *F. globosa* and *F. fulgens*. The different kinds of *Petunia* also look well in vases if carefully trained, by pegging down; and the showy annuals, *Phlox Drummondi* (pink), and *Clintonia pulchella* (blue), are also good vase flowers. Among the other plants suitable for vases are the dwarf roses, and stocks or wall-flowers; all of which look very well if nicely kept.

The best soil for the cypress and every other evergreen is sandy loam.

In answer to the many inquiries I have received respecting the *Daubentonia*, I may say, that I understand the price is two hundred francs (about eight pounds English) for a flowering plant; but that M. Le Blanc does not intend to sell any one plant till he has obtained the names of twenty persons who will take plants at that price. As I am told his list is nearly full, I hope that some of these beautiful plants may be in England in time to grace the July Horticultural exhibition at Chiswick.

EXTRACTS FROM BOOKS.

THE PHILLIPINE ISLES.

The beautiful woods which clothe the mountains and valleys of these islands with the most luxuriant green, descend also to the brink of the sea, in groves of Mangle trees (Rhizophora), and some other species. The transitory glance which we are enabled to give of these forests from the public route, and the short distance we penetrated their recesses, are insufficient to enable us to describe them properly. Fig trees appear to be the prevailing kind of wood; some species supporting themselves as strong trees by their singularly interwoven stems and running roots, by which they clasp the rocks and twine over them. Other plants, of very tender stalks, raise themselves to an astonishing height, and while their leafy summits are lost above the leafy roof of the grove, their singular fruit is seen bursting from the lower part of their trunks.

Some species retain a frutescent habit, while others climb. We missed in the woods the beautiful forms of the Acacia trees, with their variously pinnated leaves; but numerous other genera of leguminous plants here exhibit their peculiar characteristics. The Ferns (particularly the arborescent ones), the Climbers, the Orchideæ, which in Brazil form almost self-supported gardens in the air, slightly attached to the summits of the trees, are

here either entirely wanting, as the Cacti and Bromeliaceæ, or appear in very diminished numbers. The character which nature wears is of a much tamer kind. The species of Palm are more numerous than in St.Catherine; many of them are but inconspicuous; and the slender prostrate *Rotang* is, indeed, the most wonderful of them all. Amongst the Aroideæ is the *Pothos scandens*, whose jointed grassy stems and narrow foliage are seen creeping up the trunks of trees.

The graceful *Bamboo cane* grows abundantly on the banks of brooks, where its thickly-clustered stems are often waved by the wind, which causes these hollow reeds to emit a great variety of agreeable sounds. This plant attains its extreme height in the short course of one rainy season; during the following years it becomes woody, and shoots out lateral stems, without any increase of size. The young sprouts are eaten like asparagus. There are several species described by Loureiro as natives of this place, but not having seen their inflorescence, we could not ascertain this point.

The plain consists alternately of woods and savannahs; but nothing can be poorer than the vegetation of the latter, consisting chiefly of two species of grass, which grow about eight feet high, and probably ripen their seeds in autumn. There are a very few dwarf plants, mostly of the leguminous tribes, and these grow under the shade of an arborescent species of Bauhinia, which appears singly at considerable intervals. These savannahs are often set on fire, both to prepare them for cultivation, and that they may produce younger vegetation for the cattle.

A particular species of *Musa*, *Banana*, or *Pisang*, of which the fruit is not esculent, is cultivated for the sake of its fibrous stem, and considered preferable to many others. The fibres extend the whole length of the stem, which is generally about eight feet; and they are of various degrees of fineness, according to their outer or inner situation. Thus the same plant affords the fibres of which are made the excellent anchor cables almost exclusively employed by the Spanish vessels here, and that more delicate flax which is used in the manufacture of the fine striped cloths, of which the cleanly people of these islands make very elegant shirts.

Another Palm grows here (*Palma de Cabello negro*); it yields a strong, black, coarse fibre, much esteemed for ropes and cables, and far preferable to what is obtained from the *Rotang*, which, though employed by the Chinese, and many of the islanders of the Pacific Ocean, is considered as of little value, and not to be depended upon. This Palm tree, on the contrary, is much cultivated, and, with the Bamboo and Rotang, constitutes one of the most useful plants of this part of the world. (*Hooker's Botanical Miscellany.*)

VISITS TO NURSERIES.

As in my last (p. 158) I gave an account of Mr. Corsten's hyacinth show, I shall now say a few words respecting Mr. Groom's tulips. On first entering Mr. Groom's garden, a common observer might suppose that the tulips in the open beds were those to be exhibited, so rich and beautiful do they appear; but these are only the outcasts, the Parias of the tulip genus, while their more select and aristocratic brethren are sheltered in a canvas tent 140 feet long, with a raised seat at the upper end, from which the gorgeous assemblage can be witnessed. It was some time before I could examine them in detail; and when I did, Mr. Groom explained to me the comparative merits of the flowers. The best tulip in the bed I was told was called *Nourii Effendi*, and that it belonged to the division named *Bizzarres*, that is, it was one of those tulips, which have brown, or some other colour, on a yellow ground. So little, however, do I know of Tulip beauty, that this choice flower did not please me half so well as a beautiful flower, one of the rose-tulips, that is, one marked with red on a white ground, which was called *Claudiana;* and the delicacy and elegance of which pleased me exceedingly. My readers will perhaps *faire les grands yeux*, at the idea of any tulip being elegant; but though I grant that nothing can, generally speaking, be less graceful than the stiff naked stem of a tulip with its cup-shaped flower at the head, the formal regularity of which is not broken by a single green leaf near the flower, yet I must plead in favour of the beautiful *Claudiana*. Among the *Byblœmens*, that is the tulips having white grounds marked with different shades of purple, I was most pleased with a flower called Rowbotham's Incomparable. Altogether I was delighted with Mr. Groom's tulips, and I think most persons who may visit them will think with me.

Mr. Chandler's nursery at Vauxhall, and Messrs. Lee's at Hammersmith, are at present resplendent with beauty from their *Ghent Azaleas*. Both also have the beautiful *Wistaria* (or, as it was formerly called, *Glycine*) *sinensis* trained down the centre of a span-roofed greenhouse, where it produces an uncommonly good effect. At the Hammersmith nursery, the space below was filled with very fine specimens of the Tree *Peony*, so that two splendid productions of China are seen in full perfection at one glance. Mr. Chandler's Tree peonies were in the open ground, not together, but interspersed with other plants, and had, I think, a better effect than they have when planted in rows.

The Azalea ground at Lee's, is a mass of beauty, varying from the

darkest orange scarlet, to nearly white. The pink Azalea is particularly beautiful, from the delicacy of the colour, and it has a most delicious fragrance. Another kind, of a darker and duller hue, smells like violets. The Azaleas, and many other ornamental plants, appear, indeed, to have flowered this season with extraordinary luxuriance.

The cold and lingering spring kept the flowers back long enough to prevent them from being blighted, as flowers so frequently are in our uncertain climate, by spring frosts, and they are now opening with a splendour which gives us an idea of what they must be in a more genial clime. The tree peonies are remarkably fine everywhere, and at Lee's there were immense masses of blossom. The golden-leaved ivy was also as beautiful as a flowering plant; and there was a dwarf hybrid rhododendron with, I think, larger flowers than any other I have seen.

MEETINGS OF THE HORTICULTURAL SOCIETY.

April 20.—Though the plants exhibited at this meeting were not so numerous as those shown at the last, yet, as examples of cultivation, they were superior, as well as more rare. The collection from Mrs. Lawrence's was, as usual, one of the most attractive; it included a handsome specimen of *Anthocercis littorea*, to which, with two well-grown plants of *Hovea Celsi*, a Knightian medal was awarded. The other plants of interest were, a small collection of Heaths, including *E. aristata major;* and *E. Fabiana imbricata,* which was covered with delicate white, tubular flowers; *Oxylobium Pultenecæ*, which had a profusion of bright yellow heads of blossom; and, rising above the rest, was a specimen of *Echium candicans*, a kind of Viper's Bugloss, with woolly leaves, and several pyramidal spikes of blue flowers. Messrs. Lucombe and Pince of Exeter exhibited a handsome plant of *Acrophyllum venosum*, covered with feathery plumes of white flowers, delicately tinged with pink; a dwarf hybrid *Rhododendron*, called Victoria, with numerous heads of large purple flowers, which was said to be quite hardy; two seedling varieties of *Dillwynia clavata*, the flowers of which were larger and more highly coloured than those of the species; two pretty pink-flowered species of *Stylidium*, from Swan River, one of which, *S. glaucum*, had curious whorled foliage, and flowers of a handsome seedling *Camellia*, bearing considerable resemblance to those of a large Provence Rose: for these plants a Knightian medal was awarded. Mr. Edmonds, gardener to the Duke of Devonshire at Chiswick, exhibited large and well-grown specimens of *Epacris grandiflora*, *Cytisus canariensis*, and *Corræa speciosa*. Mrs. Wray of Cheltenham sent a plant of the beautiful *Pimelea spectabilis*, but, like

all others yet exhibited, wanting the red colour of the bracts, which, if it could be brought out, as in the wild specimens, would form so fine a back ground to its white flowers. Mr. Groom was awarded a Banksian medal for a collection of Auriculas, which included Oliver's Lovely Ann, Cockup's Eclipse, Taylor's Ploughboy, and Grunes's Privateer. Mr. Green, gardener to Sir Edmund Antrobus, exhibited a magnificent specimen of the white Indian Azalea, which filled the centre of the principal table, and formed a bank of dazzling whiteness from the large size and profusion of the flowers; near it stood plants of the double red and double purple Indian Azaleas, the former of which was by far the handsomest. Mr. Green also brought eight fine seedling Calceolarias; for which and the white Indian Azalea he was awarded a Knightian medal. Messrs. Brown, of Slough, sent a good specimen of *Zichya glabrata*, which, however, from the dingy colour of its flowers, did not attract much attention. Messrs. Veitch, of Exeter, sent two large plants of the beautiful *Lechenaultia biloba*, a new kind of *Stylidium* with lilac flowers, and cut flowers of *Marianthus cæruleo-punctatus*. Mr. Rivers, of Sawbridgeworth, exhibited cut flowers of his new Perpetual Rose, Prince Albert, which is a handsome, deep purplish variety. Some seedling Cinerarias of great beauty, and a specimen of *Oncidium sanguineum*, which is very inferior to most of the other species of the genus, its flowers being of a dull red and green, were sent by Messrs. Henderson, of Pine-Apple Place. Cut flowers of *Cattleya Skinnerii*, of a brilliant deep purple, a spike of *Lælia cinnabarina*, with bright orange flowers, and a vigorous spike of *Epidendrum Stamfordiànum*, which, contrary to its usual habit, had begun to throw off lateral branches, were exhibited by J. Bateman, Esq., and gained a Knightian medal. Mr. Gaines, of Battersea, showed a good collection of Pansies, and a seedling *Cineraria*, called Victoria Regina, which somewhat resembles that called the King. Sir P. G. Egerton sent a blossom of a handsome seedling *Cactus*, said to have been originated between *C. speciosus* and *C. speciosissimus;* the flower was large, and of a fine bright red. A certificate of merit was awarded to it, as well as to a collection of cut flowers from T. Brocklehurst, Esq., among which were blossoms of *Gloxinia rubra;* a spike of the pretty *Oncidium pulchellum*, having pinkish-white flowers, with a yellow spot in the centre; a handsome variety of *Gongora maculata*, margined with red; and a spike of the noble *Phaius Wallichii*. With these was sent a fruit of the *Momordica balsamina*, in an unripe state; it was curiously wrinkled and furrowed; in a ripe state it becomes a bright orange, and when it changes to that colour, it splits into three divisions, and exhibits the seeds imbedded in a crimson pulp, and it then becomes highly

ornamental. Mr. Lane, gardener to J. H. Palmer, Esq., sent a large and handsome seedling *Calceolaria*, the colour of which was light yellow, with a broad deep-purple blotch: a certificate of merit was awarded to it. Mr. Maxted, gardener to J. F. Burnett, Esq., had a certificate for a Wellington Cantaloup Melon, which he had cut so early as the 13th of April. A Banksian medal was awarded to Mr. Vare, gardener to O. F. Meyrick, Esq., for dishes of forced Cherries and Raspberries, both of which were excellent; a Banksian medal was also awarded to Mr. Chapman, for some black Hamburgh Grapes, which were in excellent state. Mr. Davis, gardener to Sir Simon Clarke, Bart., exhibited a handsome blood-red Pine, a basket of well-forced Keen's seedling Strawberry, and a dish of large Dutch Sweetwater Grapes. Mr. Henderson, gardener to Viscount Milton, sent two monstrosities, one a cluster of bulbs produced at the top of the scape of *Ornithogalum longibracteatum*, after it had flowered and ripened seeds; and the other a bud formed across the cut end of a flower stalk of *Epidendron Harrisonii*. Miss Nichols, of Barnsbury Park, exhibited a good drawing of Dahlias; and Messrs. Bailey, of Holborn, sent two galvanic plant protectors. The chief objects of interest from the garden of the Society, were *Pimelea Hendersonii*, a pretty pink-flowered plant; *Philibertia graciles;* and *Stanhopea saccata*, with cut flowers of *Sowerbœa laxiflora*, and *Hardenbergia macrophylla*.

May 4.—The finest plants were decidedly those of Mrs. Lawrence; and among them was a beautiful *Cytisus*, from the Philippine Isles, with pendent branches and white flowers; and a splendid *Dendrobium densiflorum*, with a profusion of dark yellow flowers. A specimen of *Zichya coccinea* trained over a trellis, a plant of *Kennedia nigricans*, with a number of almost black flowers, and *Genista canariensis*, were from the garden of G. C. Ridge, Esq., to whom a silver Knightian medal was given. R. Barchard, Esq., exhibited five well-grown *Hydrangeas*, and a good specimen of *Polygala oppositifolia*, trained as a standard, which gained a certificate of merit. Two beautiful *Cinerarias* were sent by the Rev. G. Rous. A handsome seedling *Epiphyllum*, and a basket of flowers of a seedling *Gloxinia*, raised from *G. caulescens*, of a remarkable size, were exhibited by Sir E. Antrobus; a certificate of merit was awarded to him. A fine specimen of the double-red Indian *Azalea* was sent by W. Wells, Esq.; it gained a Banksian medal. Mr. J. W. Parks exhibited several seedling *Cinerarias*, and W. Harper, Esq., sent *Acacia verticillata*, and a white Indian *Azalea*, that had been grown in a house, heated during the winter by one of Joyce's stoves. From Sir P. G. Egerton were a specimen of his seedling *Cactus*, exhibited at the last meeting, and a flower of another, much superior from its remarkable property of opening nearly

flat, and the inner petals having a violet tinge; a certificate of merit was awarded to it; with these was sent a spike of *Cattleya Mossiæ*. From Messrs. Lucombe and Pince, of Exeter, were cut specimens of *Callistachys longifolia*, and a new *Acacia* from Swan River, with quite the habit and appearance of a Weeping Willow. Flowers of the white variety of *Coryanthes macrantha*, and *Epidendrum Schomburgkii* of a red vermilion colour, were exhibited by T. Brocklehurst, Esq.; the former gained a certificate of merit. A fine raceme of the *Epidendrum macrochilum*, with a broad violet lip and dingy-coloured petals, and *Brassia-maculata*, were sent by J. Bateman, Esq.; and a seedling Heartsease, by R. Gibbs, Esq. A plate of well-forced Mayduke Cherries and some Figs were exhibited by O. F. Meyrick, Esq. The principal objects of interest, from the garden of the Society, were *Lechenaultia biloba*, with its pretty sky-blue flowers, which, however, are not as yet produced in such abundance as in its native country; a new *Pultenæa*, called *Brachytropis*, with yellow blossoms, which, from their dimness of colour, are not very attractive; *Hoteia japonica*, a plant with the appearance of Meadow-sweet, but prettier; the Madeira stock, with conspicuous violet blossoms; and the beautiful yellow and brown *Oncidium divaricatum*. Cut flowers of *Hardenbergia macrophylla*, and a Cucumber raised from seed, obtained from Messrs. Schertzer and Sons, of Haarlem, and distributed as a long green, but which has proved to be the Russian Cucumber, were also sent from the gardens.

HORTICULTURAL FETE.

May 15th.—This was perhaps the most splendid May Fête ever held in the gardens; as, though there were few novelties, the plants exhibited were all remarkable for their beauty, and the excellent manner in which they were grown. The Azaleas were magnificent, as were the different kinds of Cactus, the plants of *Gloxinia rubra*, and those of *Fuchsia fulgens;* and a most magnificent plant of the new *Fuchsia corymbiflora*, which has been lately so much spoken of. There was also a very fine hybrid Fuchsia, between *F. globosa* and *F. grandiflora*, and some very fine Calceolarias, particularly one of a rich, dark crimson, with a slight tinge of purple, giving it the appearance of a shot silk. The orchideous plants were very beautiful. I was, however, disappointed in the appearance of the *Lechenaultia biloba*, the pale blue flowers of which were not so pretty as I expected. The gardens were crowded for a first show, and as the day was fine, the general effect was excellent.

FLORAL CALENDAR.

JUNE.

June is not the season for labouring in a garden, but rather for enjoying the effects produced by previous labours. There are, however, some operations which may be performed in the midst of blooming flowers, and some flowers which require care, even in the bud, to ensure their blooming well. The buds of pinks and carnations, for example, have a tendency to burst on one side, instead of opening properly and regularly, to allow of the full expansion of the petals; and various means have been devised to prevent this evil. Sometimes the proper divisions of the calyx into sepals are slightly opened with the point of a small, sharp knife, or, as I have occasionally done, with a pin; and sometimes a piece of cord (see fig. 56) is cut, and the points being turned up from the centre, where the lines intersect each other, it is pushed over the bud, and the points of the cord pressing inwards, keep it in its place, even after the flower has expanded. This operation is called cording the carnation. As the stems are very apt to fall on one side, they may be supported by a piece of wire bent horizontally near the top, and with the extremity curled into a kind of crook (see fig. 57). When the plants are in flower they must be protected from the sun, and this is best done by placing the pots in a little stand with a ledge round it, and having an upright in the centre, supporting a kind of cap. The whole is made of tin and may be painted green.

Fig. 56.

Fig. 57.

The autumn-flowering bulbs which want removing should be taken up in June, and they may be kept a fortnight or three weeks out of the ground, but not longer, or they may be replaced immediately after removing their offsets, and giving them fresh soil, or stirring the old soils.

Fig. 58.

Roses may also be budded in this month; but as July and August are better for performing this operation, I shall reserve what I have to say on the subject till I give the Floral Calendar for those months.

Campylanthra elegans. The elegant Campylanthra.

MARIANTHUS, *Hügel.* THE MARIANTHUS.

Nat. Ord. Pittosporaceæ. *Lin. Syst.* Pentandria Monogynia.

Generic Character.—Sepals five, subulate, equal. Petals five, rather unequal, unguiculate, the claws channelled, conniving into a tube; limb spreading, recurved. Stamens five, rather declinate, at length diverging, shorter than the corolla, rather unequal in length. Filaments subulate, glabrous; anthers deeply sagittate, 2-celled, emarginate at the base, fixed by the back, at length recurved; cells dehiscing longitudinally. Ovarium sessile, elongated, compressed. Ovulæ numerous, horizontal, in two series. Styles subulate; stigma obsoletely-emarginate. Fruit capsular, elongated, compressed, terminated by the persistent style, 2-celled. Seeds somewhat globular, or angular, smooth.

Description, &c.—The plants belonging to this genus are all small shrubs, with twining branches, natives of New Holland and Van Diemen's Land, but found principally near the Swan River. The species have all pretty flowers, which are produced in corymbs on long naked peduncles; thus marking one striking difference between this genus and another Australian genus, called *Campylanthera*, or *Pronaya*, to which it is very nearly allied, but the corymbs of which are on very short peduncles. The *Marianthus* also has each petal of its flowers furnished with a rather long and deeply channelled claw, while the petal of *Campylanthera* either has a very short claw, or is quite sessile; and the ovary of *Marianthus* is smooth, with an indentation round it at a short distance from the base, while the ovary of *Campylanthera* is hairy and cylindrical, without any indentation. The fruit of the latter genus is a berry, and that of *Marianthus* is a capsule. The genus *Campylanthera* was called so by Sir. W. J. Hooker; but it is probable that the name will not be allowed to stand, as that of *Pronaya* had been previously applied to it by Professor Endlicher of Vienna, and as the name of *Campylanthera* was applied to another genus, belonging to *Bombaceæ*, long ago.

MARIANTHUS? CÆRULEO-PUNCTATUS VAR., *L. K. & O.* THE BEAUTIFUL MARIANTHUS.

Engraving.—Our Plate 7, under the name of *Campylanthera elegans.*

Specific Character.—Leaves entire, silky. Cymes many-flowered.

Description, &c.—Though I have affixed the name of *Marianthus* to this plant, I am by no means certain that it is correct. All I know is, that it is not a *Campylanthera cæruleo-punctatus*, as it has a long peduncle to the cyme of flowers, and as the ovary is smooth, and not cylindrical, but tapering to a point, with a deep indentation round it at some distance from the base. It is thus evidently a *Marianthus*, but it does not appear to be *M. cæruleo-punctatus*, as that plant has but few flowers in each

cyme, and, in fact, but few flowers at all; and the flowers themselves have long petals, wide asunder, and the upper three are dotted at the base, while in Mr. Henderson's plant the flower is more compact, and the two lower petals are dotted. Seven species are mentioned in Link and Otto's *Icones Plantarum*, just published, and as of these seven *M. punctatus* appears the nearest, I have given it that name. It was called *Campylanthera* in Mr. Henderson's nursery, and that name was put on the plate, as I did not see the living flower till after the drawing was made.

Whatever may be the true specific name of Mr. Henderson's *Marianthus*, it is a very pretty greenhouse shrub, with twining branches, silky leaves, and abundance of flowers; and it was raised from Swan River seeds given to Mr. Henderson by Captain Mangles. It would be an exceedingly pretty plant with *Deutzia scabra*, and some others of a similar habit, for a balcony, for twining up the pillars of a conservatory, or for planting out in a warm situation, as it is quite as hardy as *Sollya*, to which it is very nearly allied.

PLANTS SUITED FOR GROWING IN WINDOWS, AND THE MODE OF MANAGING THEM.—No. II.

BY MR. FORTUNE, OF THE HORTICULTURAL SOCIETY'S GARDEN.

I EXPLAINED in my last letter what I conceive to be the principles of window-gardening, upon which the success of the lover of these plants depends. If these principles are kept in mind, they will explain the different modes of treatment recommended in the following account of plants suited for such situations, and enable that treatment to be varied according to circumstances. As many of these plants require precisely the same management, it will be convenient to divide them into classes, and convey the information in as concise a manner as possible.

CLASS I.

In this, plants which are commonly called Succulents will be arranged, many of them being admirably adapted for window cultivation.

Cactus speciosus.
„ *speciosissimus.*
„ *flagelliformis.*
Aloe (Partridge-breasted).
„ *verrucosa.*
Crassula coccinea.
Mammillaria (any of the common sorts).
Echeveria secunda.
Mesembryanthemum coccineum.
„ „ *aureum.*
„ „ *muricatum.*
„ „ *tigrinum.*
„ „ *dilatatum.*
Rochea falcata.
Sempervivum arachnoideum.

These and many others of the same description are found to succeed perfectly in windows under the management which I shall now describe.

They are more liable to be destroyed by excess of moisture than by any other cause. Most of them inhabit those parts of the world, such as the Cape of Good Hope and Mexico, where they are often subjected to seasons of extreme dryness, and it seems from what we know of their constitution that nature has fitted them for the situations in which she has placed them.

In cultivating them, therefore, in this country, we must guard against too much wet, by potting them in well-drained pots, and using soil which will allow the water to filter readily through it. For this purpose, take one half free loam and peat, one fourth brick-dust, and one fourth silver sand; mix them well together, and add a little leaf-mould, if it can be readily procured. This will make an excellent soil for such plants.

Light is the next thing to be considered. In those countries where they are indigenous, they are fully exposed, growing frequently on rocks, on sand, and sometimes even on trees. In cultivation they must, on this account, be placed close to the window, and fully exposed to the influence of the sun's rays. In the summer months most of them succeed very well if turned out of doors, and a proper situation chosen for them.

CLASS II.

Pelargoniums (any of the var.)
Aloysia citriodora (sweet-scented verbena.)
Fuchsia globosa.
„ *coccinea.*
Fuchsia microphylla major.
„ *Ricartonia,* and many others.
Alonsoa incisifolia.
„ *linearis.*

The treatment which these must receive differs materially from the last. They should be grown in rich soil, such as friable loam well mixed with sand, leaf-mould, and cow or horse-dung; about one half of loam, and the other half made up of the other ingredients. This should be procured a year before it is to be used, laid up in a heap, and frequently turned over. In the winter months, when they are either not growing, or growing very slowly, they will require but little water; but in spring and summer this must be liberally given to them whenever they are dry.

The pruning of these plants is a very particular operation. I have known several ladies kill their Pelargoniums, or allow others to do so, by pruning or cutting them down at an improper season. The plants I allude to had flowered beautifully all the summer and autumn, but began to look bare in winter; they then cut them down, and the result was, they never grew again. Now this should never be done at this season, particularly with room plants, because, if they are not extremely vigorous, they will not be able to form fresh buds, and the old stem and roots must necessarily die.

Those who are fond of these plants should always have two sets for their windows, one which will flower early and which should be cut down in August, and another for keeping the window green all the winter. If the former are cut down at this season (August), they will soon push out branches and leaves, and make pretty plants for the next year; the latter can be cut down when they begin to grow in spring, and they will come in late again as before.

The pruning of the Fuchsias and other woody plants should be deferred until the buds begin to burst in spring, and then it will be seen what parts have died and require cutting out. They will bear any cutting at this time, and may be trained in many different ways, as the fancy may dictate. The roots of all these plants should be examined at this season, and also in autumn, when the soil will sometimes be found heavy and sour: if in this state, shake a considerable quantity off, take out the worms, put in fresh drainage, and repot with the compost recommended above.

There are other two classes, namely, hard-wooded and herbaceous greenhouse plants, several of which are well adapted for growing in windows, and must not be omitted in a notice of this kind; but these, and the different modes of propagation, destroying insects, &c., must form the subject of a future communication.

ON THE PRINCIPLES OF COLOURS, AS APPLIED TO FLOWER-GARDENS.

A GREAT deal has been said lately in the gardening periodicals on the arrangement of colours in flower-gardens; and attention appears to have been drawn to the subject by a French work, which appeared some time since, on the laws affecting colours, by a M. Chevreul. It seems that the colours in some tapestry sent out from the Gobelins were not so brilliant, and that the French government employed M. Chevreul to examine into the cause; when it was found that the fault did not lie in the colours themselves, but in the manner in which they were contrasted with each other. This discovery led Mr. Chevreul to try a great many experiments with coloured wafers, which he stuck on white paper; when he found that each of the primitive colours has what he calls its complementary colours, that is, one directly opposite, which, when mixed with it, will make a dingy white, or a dull black.

To discover the complementary colour of any given colour—say red, for example—it is said only to be necessary to fix the eyes earnestly on a

spot of black, and then to fix them on a spot of red, when a dim circle of green, the complementary colour to red, will be seen round the red spot. In the like manner, the complementary colour of purple will be found to be orange, and of blue, yellow.

It has been long known that there is in matter generally a principle of attraction, and another of repulsion; and in colours there is also a principle of union, and another of opposition. The art of the landscape-painter, the florist, and the landscape-gardener, as far as colours are concerned, consists in the employment of unions and contrasts, so as to produce harmony; and in a particular exaggeration of the one or the other, so as to add to harmony, expression, or character.

All colours, considered philosophically, are contained in light in a state of combination. This combination may be dissolved, or decomposed, by means of a portion of crystal glass, of a triangular shape, which is called a prism. When the rays of light are made to pass through this prism, they are found to resolve themselves into three simple colours, viz., red, yellow, and blue; and three compound, or intermediate colours, each formed by the union of two primitive colours, and making purple, green, and orange.

To these some add violet; but this seems unnecessary, as by means of reds and blues, mixed together, are produced all possible shades of purple; by means of blue and yellow, all possible shades of green; and by the mixture of red and yellow, all possible shades of orange.

Hitherto I have said nothing of black or white; which, for all practical purposes, whether in painting, floriculture, or landscape-gardening, may be considered as colours, though with reference to science they are not so; as black is produced by the absorption of all the rays of light which fall upon any surface, and white by the reflection of all these rays of light. Of course, in neither of these cases can there be any colour, because colour can only be produced by the decomposition of light.

In speaking of the disposition of colours, I shall first say a few words on the colours properly so called, and next on the disposition of black and white.

The grand principle in the employment of colours in quantity, or in equal quantities, is never to employ a compound colour between the two primitive colours which compose it. For example, purple ought never to be employed between blue and red; green between blue and yellow; or orange between yellow and red: but each primitive colour should be contrasted with its complementary one, which will always be found to be a compound one. Thus red is a primitive colour, but green is a compound one; yellow is primitive and purple compound; and blue, primitive and

orange compound. In some cases, where one colour is employed in a large quantity, and another in a very small quantity, one primitive colour may be opposed to another with good effect. For example, adjoining a mass of blue there may be a speck of red, or of yellow. This doctrine holds good more particularly when masses of compound colours are employed; and thus, nothing is finer in effect than a mass of green, with two or three specks of red, or of bright yellow. If we consider black and white as primitive colours, the same doctrine will apply to them; and thus specks of bright light, or of clear black, may be placed adjoining, or among objects of any colour whatever.

In disposing of an assortment of plants in bloom, with a view to producing a general harmony of colouring, or even in making up a nosegay for the same purpose, the same colours should recur at least thrice in the same garden or border, or in the same nosegay. One of these masses of colour ought to be larger than any of the others of the same kind; and the other two masses, or specks, ought to be of different sizes, and not so far distant from the first, or principal mass, as not to be easily recognised by the eye. This necessity for three or more portions of colour, of a principal mass and of secondary ones, is derived from the principle of a whole; for to constitute this there must not only be parts, but a predominating part.

Thus, in arranging flowering plants in a conservatory, each colour should be carried on in the same manner, and according to the same rules of art as a painter would colour a large picture. The green is carried throughout the whole naturally by the leaves, but the reds, the blues, and the yellows, or any of their intermediate shades, should be so arranged as to carry each colour on throughout the whole, so as to satisfy the eye.

In the disposition of flowers and trees, a perfect black seldom if ever occurs; indeed, there is no such thing in nature as a perfectly black flower; but the very deep browns and blues in flowers, and the very dark evergreens in trees, may be treated as blacks. These, with whites, which are abundant in flowers, and to be found in trees with silvery foliage, may be sparingly introduced everywhere, but never in masses, where the end to be attained is gaiety, variety, or beauty. Pine woods are objects of gloom and grandeur, and plantations of silvery willows, or other white-leaved trees, are scenes of great sameness and insipidity. When single pines occur, or single willows, or groups of two or three of either class of trees, they become objects of a different kind, and are either picturesque, elegant, varied, or even beautiful, according to their own particular forms, or the surrounding circumstances. Thus a pine, backed by a near hill, appears of a lighter green, while a white willow, backed by the sky,

appears of a darker hue. As a general rule, it may be stated that large masses of black in trees are always productive of more effect than large masses of white; and the same rule will hold good in a great measure in the disposition of flowers.

These remarks are intended chiefly to assist those who have little natural feeling or taste for colours. By bearing them in mind no great errors can ever be committed; but to attain the most beautiful effects of mixture of colours in flowers, there must be a certain degree of natural taste for colours; or a considerable share of experience in working with them on paper, either in colouring landscape, or in drawing flowers. Harmony, whether in colours, sounds, or forms, is alike produced by the union of concords and discords on certain general principles, which are easily laid down, but the application of which, so as to produce superior effect, can only be attained by minds endowed by nature with taste and genius, and highly cultivated by art.

ON RAISING VARIETIES OF THE AQUILEGIA VULGARIS.

BY MR. GORNER.

The common Columbine (*Aquilegia vulgaris*) ought to be reckoned among those plants that add to the perfection and beauty of our gardens, and should therefore attract the attention of the florist. It is true that we are already in possession of so many indigenous and foreign plants, and have so many genera, species, and varieties, that the florist cannot pretend to cultivate even the most beautiful of them all; but the charm of novelty might induce him to add to his collection by exerting himself to produce something new from nature, and thereby to enhance the enjoyment. The Columbine seems to me to be a plant peculiarly suited for this purpose, as its beautiful flowers appear at a time when we have but few to ornament our gardens, as the spring flowers are then over, and those of summer are not so far advanced as to fill up the empty spaces. A novelty, therefore, which pleases by its compensation and enrichment, ought not to be rejected, particularly the Columbine, as it and its numerous varieties are easily forced, and are so much adapted to ornament our flower-gardens, chambers, and greenhouses.

The double variety of *Aquilegia vulgaris*, in a variety of colours, has long been known to us, from which *A. vulgaris*, var., a beautiful variety, has been obtained; also *A. vulgaris corniculata* and *inversa*, and others with double flowers. Our gardeners are also indebted to *A. sibirica*,

glandulosa, and *alpina*, for very beautiful varieties, and which are quite equal to the former in beauty. The new Himalayan Columbines, *A. glandulosa* and *A. fragrans*, are very splendid.

In *A. vulgaris stellata* the nectaries, or petals with a spur, are transformed into petals without a spur, and from this transformation a double brownish red variety, with whitish green points, has been obtained, which florists have called *A. speciosissima* in their catalogues.

I have even had a variety of this form in my own gardens, in which the nectary or spur has become turned up and covered with a petal, thus uniting both forms into one. From these three conformations about fifty varieties have been produced, and which are from five to seven times doubled. All the principal kinds have the most beautiful shades of colour, even to the incomparable blue of our corn-flower. A regular table of the colours might be made, and it is to be hoped that, with the progress of cultivation, and by continually sowing the seed of so great a variety of form and colour, that a multitude of more beautiful and rare varieties will be produced, and it will afford me the greatest pleasure if I can induce others to participate in the cultivation of this ornamental plant.

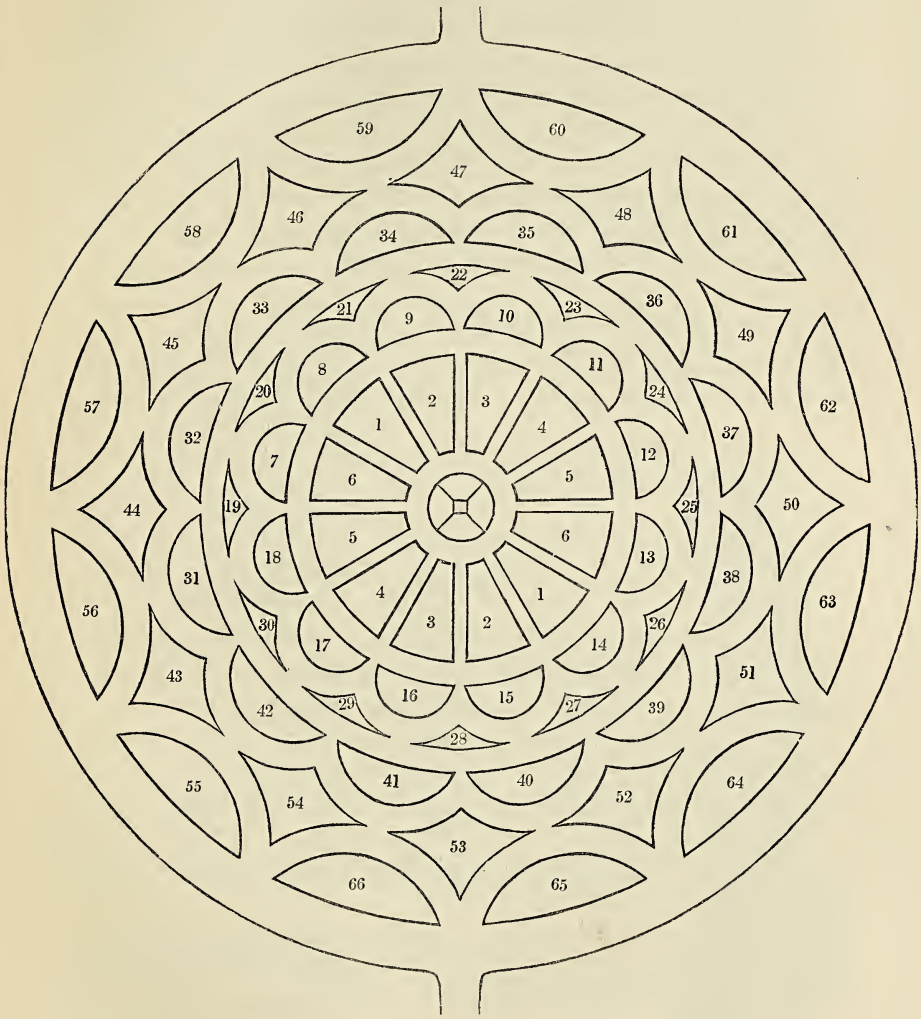
ON FLOWER-GARDENS.—No. II.

BY THE EDITOR.

In what are called geometrical flower-gardens, the flowers are planted in masses of one kind; and the effect depends on covering the beds entirely, so that the shape of each, when seen at a little distance, shall be distinctly defined by the colour of the flowers that fill it, and on the proper arrangement of the colours. The first of these desiderata depends entirely on the art of the gardener, in growing his plants so that they may either admit of being pegged down, or be sufficiently dwarf to cover the bed without; but the second is generally considered to require some knowledge of the laws of colours. A great deal has lately been said on this subject, and my readers will find a paper on it at p. 196; but I think any lady, who possesses a good taste in dress, or in furnishing her apartments, will be able to arrange the flowers in her garden. No one would think of wearing a blue spencer with a pink gown, or of trimming red curtains with purple fringe; so that I think most ladies will find their own taste and feelings sufficient to guide them aright, without studying M. Chevreul's somewhat abstruse work. To illustrate the mode of planting a geometrical flower-garden, we will suppose the ground laid out

in the circular form shown in *fig.* 59; a form which has the rare advantage of looking better on the ground than on paper, and which, from

Fig. 59.



CIRCULAR FLOWER-GARDEN.

its consisting entirely of parts of circles and straight lines, is very easy to design. In the centre may be a pyramid of white climbing roses, such as Madame d'Arblay, or the Queen of the Belgians, as white harmonises with every colour. The twelve segments of the circle, surrounding the

small one in the centre, may then be planted with rather tall plants, as follows:—

1. *Salvia fulgens*, scarlet.
2. *Calceolaria viscosa*, golden yellow.
3. *Petunia splendens*, dark purple.
4. *Lysimachia verticillata*, yellow.
5. *Salvia patens*, blue.
6. *Erysimum Petrofskianum*, orange.

The other six to correspond, beginning with *Salvia fulgens*. All these should be tied up, or trained to frames, spread in a pyramidal manner, so as to form separate masses of colour, and yet to be seen over the heads of the plants forming the outer part of the pattern. The half-circles beyond may then be planted as follows, with plants somewhat lower:—

7 & 13. *Amaryllis Monelli*, blue, trained up.
8 & 14. *Phlox omniflora*, white, tied up.
9 & 15. Scarlet geraniums.
10 & 16. *Coreopsis tinctoria*, yellow and brown.
11 & 17. *Petunia nyctaginifolia*, white, tied up.
12 & 18. *Eschscholtzia californica*, yellow.

The small beds from 19 to 30 may be planted as follows:—

19 & 25. *Isotoma axillaris*, lilac.
20 & 26. *Lobelia lutea*, yellow.
21 & 27. *Phlox Drummondi*, pink.
22 & 28. Whitish geraniums, such as *Bella Donna*, *macranthum*, &c.
23 & 29. *Lysimachia quadriflora*, yellow.
24 & 30. *Nicrembergia gracilis*, whitish.

The twelve half-circles beyond these may be planted as follows:—

31 & 37. *Verbena Melindres latifolia*, scarlet.
32 & 38. *Œnothera taraxacifolia*, or *Œ. speciosa*, white.
33 & 39. *Lobelia erinoides*, or *L. gracilis*, blue.
34 & 40. *Œnothera Drummondi*, or *Œ. grandiflora*, yellow.
35 & 41. *Campanula garganica*, or *carpatica*, blue.
36 & 41. *Verbena teucroides*, white.
37 & 42. *Sanvitalia procumbens*, yellow.

The diamond-shaped beds beyond may be covered with a light trellis-work of wires, or wood, painted green, at about six or eight inches from the ground, over which the following creepers may be trained.

43 & 49. *Lophospermum scandens*, or *erubescens*, pink.
44 & 50. *Thunbergia alata*, buff.
45 & 51. *Maurandya Barclayana*, blue.
46 & 52. *Eccremocarpus*, or *Calempelis scabra*, yellow.
47 & 53. *Cobæa scandens*, purple.
48 & 54. *Tropæolum peregrinum*, or *aduncum*, the canary-bird flower, yellow.

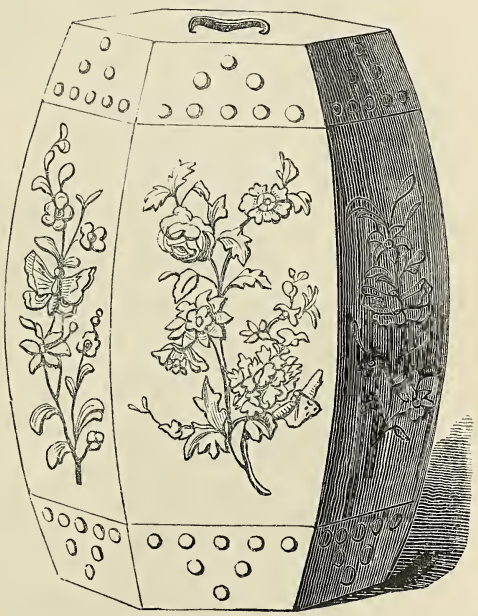
The outer range of half-circles may be filled entirely with showy plants, pegged down, as follows:—

55 & 61. *Verbena Melindres latifolia*, or *V. Hopwoodiana*, scarlet.
56 & 62. *Petunia nyctaginiflora*, white.
57 & 63. *Verbena Tweediana*, crimson.
58 & 64. *Calceolaria rugosa*, yellow.
59 & 65. *Petunia splendens*, or *P. bicolor*, yellow.
60 & 66. *Lasthenia californica*, yellow.

To keep such a flower-garden in proper order, a reserve garden will be absolutely necessary; and two or three free-flowering plants should be kept in pots, to fill up blanks, if required, when the proper plants may be wanting. The best plants for this purpose are the white shrubby Candy-tuft (*Iberis sempervirens*), the orange Hedge Mustard (*Erysimum Petrofskianum*), the blue *Lobelia erinoides*, or *L. gracilis*, and the scarlet *Verbena*

Melindres latifolia, and the crimson *Verbena Tweediana*. These two are the hardiest of all the Verbenas; and they and all the other plants just mentioned, if reared from cuttings made in June or July, the preceding year, and kept in a cold frame during winter, will come into flower the last week in April, or the first week in May, and will continue flowering till October. The pots in which they are kept should stand without saucers, and they should be well drained, by being filled nearly one-third of their depth with potsherds; they should be watered twice a day during hot weather, and once a day if the weather be cold; and the flowers of the Verbenas should be pinched off as soon as they fade, but those of the Erysimum, the Iberis, and the Lobelia should be left. The flower-stalk of the Erysimum will continue to elongate itself during the whole summer, always having a cluster of bright orange flowers at its extremity, long after the lower flowers have fallen, and even after the lowest seed-pods have ripened. The plants should be set in the open air in May, and kept there till wanted. It may be here observed that the common *Verbena Melindres*, or *chamædrifolia*, is very tender, though its variety, *V. M. latifolia*, is the hardiest kind known; and that the purple *V. Arraniana* and its varieties, and the pink *V. incisa*, are all rather tender. *V. teucroides*, which has white flowers, is tolerably hardy; but it has a coarse weedy habit, like *V. venosa*, and the other hardy purple or bluish kinds.

Fig. 60.

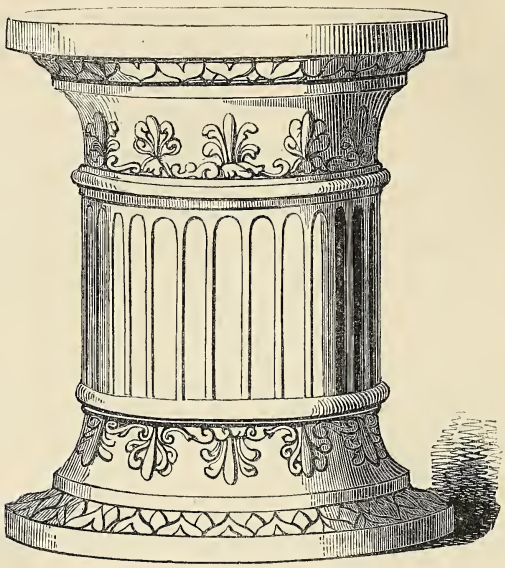


THE CHINESE SEAT.

The walks of the circular garden shown in *fig.* 59 would look well, either of turf or gravel, if the edgings in the latter case were kept neatly trimmed and low; and the situation of the garden should be near the house, but below it, so that it may be looked down upon from the drawing-room windows; and if this cannot be managed, there should be some rising ground, or a terrace, near, where there should be a few seats, such as the Chinese porce-

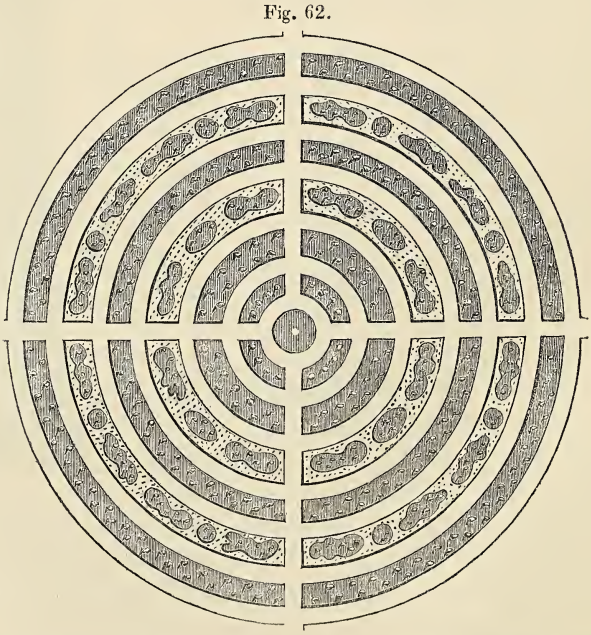
lain one shown in *fig.* 60, or that in imitation of the fallen capital of a column shown in *fig.* 61.

Fig. 61.



SEAT IMITATING THE CAPITAL OF A COLUMN.

Fig. 62.



In some situations this plan might serve for planting a rosery; the

roses being arranged symmetrically according to their colours. *Fig.* 62 would, however, make a better rosery with the walks of grass, and a fountain in the centre. In this case, the beauty of the rose-garden should not be seen fully without walking in it; and thus, instead of the outer ring containing the lowest plants, as in the former garden, the outer circle should be planted with tree-roses; some of the best of which are Brennus, or Brutus, Wood's superb, and all the Noisettes. Within this there should be a circle of beds of dwarf roses, consisting alternately of the pale and dark crimson China *Cramosie*, with a few standard roses, grafted with Jaune Desprez, a buff rose with a yellow centre, the yellow Ayrshire, *Rosa Harrisonii*, &c. Within these may be a circle of pillars and pyramids of roses, of various kinds, such as Madame d'Arblay, Rosa ruga, Rose Clare, Rose de Lisle, and the other kinds of Boursault rose. Within these may be a circle of the scented roses; these are generally cream-coloured; but some, such as Thé Hardy, are of a beautiful pink. Within this are two other circles, which may be filled with dwarf standards of choice sorts; and in the centre may be a fountain, or a pedestal and vase of Austin's artificial stone, like that shown at *fig.* 63. The tazza in this case, however, instead of being filled with moneywort, as shown in the figure, should have in it the yellow Austrian briar, or some similar species; and some very choice rose, such as the new *Rosa devo-*

Fig. 63.

niensis, should be placed in the small vase above. Should this pedestal and vases not be liked, a great number of other similar ornaments may be seen at Austin and Seeley's artificial stone works, in the New Road, near Fitzroy Square, and in other similar places.

In all cases of geometrical gardens, whether filled with roses or miscellaneous flowers, the greatest care must be taken to have all the plants in high health and vigour, so that they may bear abundance of flowers; and whenever a plant appears sickly it should be removed directly, and its place supplied by a healthy plant from the reserve ground. The dead roses and other flowers should also be cut off every day; the loose branches should be tied up or pegged down whenever necessary.

GARDEN VISITERS IN THE OLDEN TIME.

COMMUNICATED BY J. J.

The following curious passage occurs in one of Bradley's works on gardening, written about 1690; and it appears to relate to the flowering of the American Aloe (*Agave americana*), and the Torch thistle (*Cereus speciosissimus*), for the first time in England. The latter was, as we may easily conceive, thought in those days the rarest and most valuable of the two; and accordingly against it the rage of the assailants was chiefly directed.

"When the Aloe was in such great perfection as to invite more company than my house and garden could well contain, and the flowers of my Torch thistle were opening, three men, habited like gentlemen, were inadvertently let up to see it, who no sooner were come to the plant but one of them began to break off the buds; and being desired to desist, took hold of the main stem and endeavoured to break it by violence; but it was much too strong to give way to their base intent. This their attempt was soon discovered by all the gentlemen and ladies in my garden, and I was called to the assistance of my servant, and to save my plant from the fury of their rage. When immediately one, who was on the top of the staircase in my aloe-house, being entreated by me to come down, fell a swearing, and drew his sword on my man, telling him he would run him through the body if he offered to assist me; and in the mean time kicked me on the head when I offered to go up, while another at the bottom of the stairs, one of his companions, pulled me by the legs, and a third of them wounded me with his sword in two places of my neck, so that I was under the surgeon's hands for many weeks,

devoid of attending the various persons that did me the honour of coming to my garden, which was one disadvantage. And, moreover, the violence I had received occasioned all the good company that were ready to see my curiosities to leave my garden; to the great loss, not only of the money I might have gained, but, I fear, that noble company might be disobliged. I am the more particular in this account, that I may have an opportunity of acquainting that worthy assembly thoroughly of the case, and to inform the world, at the same time, that I have prosecuted the persons that committed the riot; notwithstanding one of them said he was offered to be put in the commission on the peace two or three months before, and would now accept on't, that he might have an occasion of destroying my plants and ruining my house."

A VISIT TO CHATSWORTH.

BY H. G. P.

I WENT to Chatsworth on business, with a letter of introduction to Mr. Paxton, who, as it is well known, has the entire management of all the improvements now carrying on in that princely domain. On inquiring for Mr. Paxton's residence, I was directed to pass through the kitchen-garden, which I found to my astonishment contained eight acres of ground. At the extremity of this gigantic potarium I found the house, a large and very handsome one, with two beautiful conservatories attached to it, filled with exquisite specimens of the rarest plants. Mr. Paxton was unfortunately gone to London, but we were shown into a drawing-room exceedingly well and tastefully furnished, with a grand piano-forte, pictures, &c.; and what interested us most, some dozen of silver cups, presented by various horticultural societies to Mr. Paxton. Mrs. Paxton, a very unaffected nice woman, soon made her appearance; and when she knew our business, she expressed her regret that Mr. P. was from home, as she knew he much wanted to see us: but as we were there, she said, she hoped we could amuse ourselves by seeing Chatsworth, and desiring us to return to lunch, she sent one of the gardeners with us to show everything. I then found that Mr. Paxton was *the Paxton* who publishes the beautiful work we take in, and a man of education and refinement.

Where I shall begin with my description of the most complete, most extensive, and best cultivated garden I ever saw, whether in exotic plants, stove and hothouse fruits, kitchen stuff, hardy fruits, or herbaceous

flowers, I hardly know; therefore you must take my arm and accompany me, attended by an intelligent gardener, into the two conservatories, attached as wings to Mr. Paxton's house, which were filled, on one side with stove plants, all gigantic but flourishing, and in full flower, such as are in season, the parasitical plants falling from the roof in clusters of flowers; on the other side, conservatory plants, among the most conspicuous of which were some *Ericas* standing two or three feet high, and five or six feet in circumference, so covered with flowers as to leave hardly a space through which you could discern the leaves and branches. Among many other plants falling in graceful tresses from the roof, was the *Mimosa procumbens*, the most elegant plant I ever saw, and to me entirely new (perhaps it is figured in Paxton's work). But I shall never show you Chatsworth if I stop to describe each plant that threw me into ecstacies; the gardener, finding he had a man who enjoyed plants, could not be attentive enough to William and me.

We next went to the succession fruit houses, consisting of eight ranges of hothouses, three in each range, measuring 240 feet long each range: in the first six houses were pines in every state, from ripe fruit to young plants; the next six houses, grapes, each house in succession to the preceding one, and with the most superb crop of grapes you can conceive; then came peach-houses, the fruit of which was all over; next melon-houses filled with fine fruit; and last of all, fig-houses, with full crops of figs just ripening. These houses, though very interesting to many, I have hurried you through to accompany me to the mushroom-houses, or rather cellars; I dare not say what length these were, but I should think at least 1000 feet long. We will next walk through part of the kitchen-garden, consisting of half an acre of asparagus beds, quarter of an acre of onions, quarter of an acre of carrots, quarter of an acre of rhubarb (the finest I ever saw); every other vegetable in the same proportion. "Why," observed William to the gardener, "you can never consume these vegetables?" The reply was, "When his Grace is down, we make a pretty considerable hole in them, when you recollect we have one hundred mouths in the servants' hall, besides from fifty to sixty at his Grace's table, and the stewards' table, housekeepers' table, &c., to supply in addition." I will not take you into the orchard, which also consists of eight acres of ground, and contains the finest sorts of apples, pears, plums, damsons, &c. &c., but walk across the park to the ornamental garden; but I forgot to give you first a peep into the orchideous-house, containing I believe a specimen of every orchideous plant known in England. The house is not ornamental, being built so as to suit the plants, but it covers an immense space of ground, and finer specimens,

many in full blossom, I never saw; I do not except Loddiges'. Now we cross the magnificent park which, though I might fill a large sheet in describing, I will not, as all parks are parks; but perhaps this is most beautiful by nature, and improved by art to its highest perfection. I will only just stop you one moment to look at the mansion—or I ought rather to say small town, for it is the largest house I ever saw (Buckingham palace would be lost in it), and of the purest Grecian architecture, splendid in the extreme. The window-frames are gilt, and the divisions between the panes are also gilt; but withal they are not gaudy or tinsel-looking, but majestic, and really nobleman or princely-like. We have now reached the ornamental garden, at a distance of a quarter of a mile from the house, forming one of the vistas from the windows, the beds of flowers cut out of the finest velvet carpet you ever saw; each flower having its own peculiar bed, the formality of it broken by standard rose trees, climbers, running up antique pillars (real antiques), baskets of flowers, or broken ruins covered with the tribe of rock plants; the garden backed by a fine wood, in front of which is the greenhouse, of a large size, though, as you will learn hereafter, not sufficiently large for the duke's princely imagination: the greenhouse filled with Camellias, five and six, and even ten feet high; Geraniums, Botany Bay trees (for I cannot call them shrubs), Mimosas, Ericas, Palms, Musas; in fact, a mixture of the productions of all countries; and an iron staircase leading to a gallery, that you may after admiring the plants go above, and see their tops reaching ten to fifteen feet high. Nothing can be finer than the state these plants are in. From this we descended to the Italian garden, which is close under the windows of the house; stopping on our way to admire the different vistas over lakes of water, which by magic throw up fountains on different sides, the water of one of which reaches sixty feet in a single column. Arrived at the Italian garden, we might fancy ourselves really in that country; a level plot of some two or three acres, with marble divisions for the flowers, some in form of immense baskets, others vases, some immense sea-shells; in fact, every variety of form, all filled with plants in flower; which being in pots, are taken away and succeeded by others, thus under the windows of the house having a perpetual flower-garden: the formality of these again broken by large plots of roses, many of which are still in flower, and the whole garden is formed in terraces, in the Italian style, with stone balustrades fencing each terrace.

We must now, however, walk on, or our time will not let us see the waterfall, which terminates one of the vistas. The machinery of this is so good, and the deception so well managed, that you have a broad stream

of water apparently falling 500 or 600 yards perpendicular, when it is only a succession of broad steps that it falls over from the top of a hill some 200, or thereabouts, feet high, being supplied with water from a reservoir of sixteen acres on the top. The water is amply sufficient, and falls with great force, occupying about three minutes in reaching the bottom from its first appearance at the top, and disappearing at the bottom as if by magic, being conveyed under ground.

Now we arrive at what will be the wonder of wonders—it is not yet finished, the new conservatory, situated in a secluded spot surrounded by magnificent oaks, which sheltering it from the winds, do not shade it from the sun. I cannot describe it—the centre is finished, and consists of one oblong oval dome, 60 feet high, 360 feet long, and 140 wide; with two wings, each 100 feet long, entered through an arch of rockwork as if going into a cave, but the entrance large enough for a carriage to drive in, and a carriage-drive goes actually through the whole. The plants are all to be planted in the soil, no pots; and some idea of its size may be formed, when I tell you the pipes for heating it would form a line six miles long! I never saw anything so magnificent; when we drove into the park, the sun was shining on it, and William took it for a sheet of water surrounded by hanging woods: it is so far finished, that the centre large dome will be filled with plants this autumn. The carriage-drive through it will be paved with wood pavement. Our time has been so taken up with this immense conservatory, that we shall only have time to see the water-garden on our road to the house. This garden consists of weeping willows and other trees, collected together in a clump in a little secluded spot, which on a sudden throw jets of water from the point of every leaf, forming an artificial shower of rain; but although very pretty, and certainly very ingenious, the trees being all artificial, still after the princely grandeur we have been admiring it seems small and petty.

The mansion at Chatsworth is worthy of the rest. We enter an immense hall, curiously finished, with carved wood full of curiosities, such as canoes, Indian arms, cross-bows, &c. &c., and with the ceiling painted in fresco. By a noble marble staircase we ascend to the state apartments, which are on a very large and superb scale; but as all these sort of things in great houses are nearly the same, I will not describe but one or two that are unique. When all the range are thrown open, you have one continued view 600 feet long, furnished in a most princely style, handsomer I think than Buckingham Palace. The rooms worth describing are—the dining saloon, a noble room, built by Wyattville; the dining tables will accommodate sixty persons in one line, and are as broad as

a small street, about twelve feet wide. There are only seven pictures in this room, all full length portraits; the ceiling is arched and curiously carved; the two chimney-pieces of marble, superb; the pilasters being figures of angels as large as life, of pure white marble, supporting the frieze; in the corners of the room, pedestals of Derbyshire marble, supporting figures the duke picked up in Italy. The next room to claim attention was on the south side of the house, a noble library, about 90 to 100 feet long, well furnished with everything that can be wished for in a library, and containing about 30,000 books; at the end is a sort of small vestibule, with dome, supported by eight columns of rare Italian marbles; each pillar one single piece of marble, in which were magnificent globes, &c. and folding doors, which, when thrown open, usher you to the statue-gallery. The effect upon both William and me was to make us dumb, we scarcely uttered a word in the statue-gallery, and what we did say was in a whisper; it was filled with superb statues both ancient and modern: among the latter, some of Canova's chefs-d'œuvre, particularly one, the mother of Buonaparte. Here we unconsciously spent more than half an hour. At the opposite door to which we entered, a couple of folding doors thrown open admitted us to another large gallery lighted from above, fitted with large specimens of oranges, lemons, Camellias, Rhododendron arborea, Bananas, and a large variety of other plants in large tubs or boxes, forming a complete promenade garden in the house; these plants being placed on the floor without order, leaving plenty of space to lounge about. This, when lighted up at night, I am told has a most enchanting effect. I have said nothing of the picture-gallery, or a gallery filled with drawings and prints; these we had not time to look at, but at least a day's work was in these two rooms alone, had we been able to have devoted time to them. I also say nothing of the observatory, a large room on the top of the house, with every sort of astronomical apparatus; in fact, as I said at first, to describe everything would take a folio volume. Suffice it to say, that with the exception of a museum, there is everything that any man of taste could want, whether he be a botanist, artist, astronomer, sculptor, literary or scientific. The only mean room in the house was the billiard-room, which was very comfortable, but looked common-place. The vistas from the different windows must be seen, they cannot be described.

REVIEWS.

The Botanical Magazine for June contains—

Euterpè montana (t. 3874). The Mountain Palm-tree. A handsome plant, which, though introduced in 1815, has never been figured before.

Anygozanthus Manglesii (t. 3875). A very curious Swan River plant, which has been frequently figured before.

Brachycome iberidifolia (t. 3876). The Swan River Daisy. This plant has been figured in the Bot. Reg.

Maxillaria stapeloides (t. 3877). An orchideous plant, with flowers closely resembling those of the Stapelia, or Carrion-flower. It has been before figured in the Bot. Reg.

Dahlia glabrata (t. 3878). A dwarf species of Dahlia, with a less coarse foliage than the common Dahlia.

Mormodes pardina, var. *unicolor* (t. 3879). An orchideous plant, before figured in the Bot. Reg.

Only one of these plants, viz. the Palm, is figured for the first time.

The Botanical Register contains—

Brownœa grandiceps (t. 30). A stove tree, with a large head of bright red flowers. A most extraordinary plant, a native of the mountain forests of Caraccas, which, though introduced many years ago, has not flowered or been figured before.

Cœlogyne flaccida (t. 31). A Nepal Epiphyte, with long drooping racemes of white flowers, before figured in the Botanical Magazine.

Strobilanthes scabra (t. 32). A pretty stove shrub, with yellow flowers, from Nepal, which is new in England.

Pimelea spectabilis (t. 33). A showy species of Pimelea, not before figured, with very large heads of flowers, and smooth, rather glaucous, leaves, so arranged as to form four rows along the stem.

Catasetum Trulla (t. 34). A new species of Catasetum, but one which does not possess any beauty.

Three of these plants have not been figured before.

QUESTIONS AND ANSWERS.

KEEPING PLANTS IN LIVING-ROOMS.

I HAVE been told that it is very dangerous to keep plants in my bedroom, but that I may keep them safely in my sitting-room. Is this the case? and if it is, what is the reason?

TURNHAM GREEN,
May 28th, 1841.

My correspondent has been rightly informed that plants may be kept with perfect safety in living-rooms, though they are injurious in bedrooms. The reason is, that when plants are exposed to a strong light their leaves absorb a great portion of the carbonic acid gas which is floating in the atmosphere, and, after having decomposed it, they give out the oxygen. Exactly the reverse of this takes place with human beings: they inhale the atmospheric air, which is decomposed in their lungs, and the oxygen retained, while the carbonic acid gas is given out. Thus plants in rooms are far from injurious in the day, as the strong light they are exposed to enables them to decompose and purify the carbonic acid gas, which is always abundant in sitting-rooms, as they take away the unwholesome part, and leave only the oxygen; but in the darkness of the night their leaves give out carbonic acid gas, instead of absorbing it, and as a superabundance of this gas produces stupor, headaches, and a sense of suffocation in those that breathe it, plants often produce these evil effects on those who keep them in bedrooms. Of course some persons are more affected than others, as the degree depends upon the nervous sensibility of the person acted upon.

REVIVING PLANTS.

My correspondent on this subject will find the following extract from the *Journal of Science* for 1828 contain all the information she wishes:—

"This is called a proved method of reviving plants, &c., when their leaves and buds are faded, and their bark and roots hard and nearly dry, by M. de Droste, of Hulshof. The directions are to dissolve camphor to saturation in alcohol, adding the former until it remains solid at the bottom; a sufficient quantity of rain or river water is then to have the alcoholic solution added to it, in the proportion of four drops to one ounce of water. As the camphor comes in contact with the water, it will form a thin solid film, which is to be well beaten up with the water; for a

short time the camphor will float in the water in small flocculi, but will ultimately combine with the fluid and disappear. Plants which have been removed from the earth, and have suffered by a journey or otherwise, should be plunged into this camphorated water, so that they may be entirely covered; in about two, or at most three hours, the contracted leaves will expand again, the young faded and dependent shoots will erect themselves, and the dried bark will become smooth and full. That being effected, the plant is to be placed in good earth, copiously watered with rain or river water, and protected from the too powerful action of the sun, until the roots have taken good hold of the ground. When large plants, as trees, are to be revived, their roots are to be plunged into the camphorated water for three hours, the trunk, and even head of the tree, being frequently wetted with the same water, so as to retain them in a properly moistened state. But it is always best, if possible, to immerse the whole of the plant. Shoots, sprigs, slips, and roots, are to be treated in the same manner. If plants thus treated be not restored in four hours, their death may be considered as certain, for they cannot be recalled to life by any artificial means; they should consequently never be left more than four hours in the camphorated bath, because the exciting action of the camphor, when it is continued for a longer period, may injure the plants, instead of doing them good. It is not necessary to say, that the final prosperity of the plants, thus reanimated by the camphor-water, must depend upon the particular properties of the former, the state of their roots, and the pains that are taken with them. The camphor produces no other effect than to restore life to plants nearly dead; after that, all proceeds according to the ordinary laws, and their ultimate state must be left to art and nature."

YELLOW ROSES.

Madam,—It is only within these two years that I have seen a yellow rose (to be sure, I am somewhat of a cockney, and not much conversant in rural affairs), but some years ago I had a country house of my own, and I recollect my wife showing me, with great complacency, in our garden, a yellow rose, or rather a yellow rose-tree, for it never flowered, and soon died. I remember, too, visiting in Hampshire, and being shown as the most valuable thing on the premises, a yellow rose-tree, growing against the wall of the house, in the most select situation; but it never flowered, or if it did show buds, they were eaten up by insects, and never came to perfection, to the great mortification of the good lady of the house. Indeed, a yellow rose was like a black swan, a *rara avis*, and nowhere to

be seen. A friend of mine had an approach to it, which he called the *Rosa pallavicina*, a sort of China rose, of a pale straw-colour, a standard in the garden, but this too was killed in the severe frost of 1838-9. Last year, in the beginning of June, when walking through a nursery-garden in search of some pretty flowers in pots, I was struck with astonishment, indeed I could hardly believe my eyes, in seeing two or three standard rose-trees, with round compact heads, richly studded with gold-coloured flowers, not much larger than half-a-crown, rising from among a dense mass, and rather small, dark green leaves, and forming a beautiful and, to me, quite a novel sight. I thought of my poor wife—now no more! and wondered whether her yellow rose would ever have been anything like these; but I remembered the leaves were larger and fewer, and this plant had altogether a different appearance. The nurseryman informed me that he had such a demand for these trees that he sold them as fast as he could propagate them (which is done by budding, I believe, and which he said was rather difficult to manage with this particular kind), and that these roses were the yellow Scotch rose. Now the Scotch rose I have understood to grow wild on the mountains, and a very pretty rose it is, and I can understand how it has been raised double from seed, as many other plants are; but how this rose has been turned yellow, and that of such a bright deep hue, when the Scotch rose is originally white, I cannot understand. This year they have not flowered so well, the flowers are not so bright, and the leaves are brown, having been scorched by the great heat in May; but I have seen another yellow rose, with a larger flower, and leaves like the Sweet-briar, which they call, I think, *Harrisonia;* but it does not grow so close, and the flowers are fewer. I have heard of a very curious and beautiful French yellow rose, the petals of a light yellow, and gradually deepening in colour towards the base, where they assume a deep rich orange, or scarlet colour. This must be very beautiful, and I live in hopes some day of having my eyes regaled with a sight of it; it would be more beautiful, but could not give me more pleasure than the pretty little Scotch rose did. When in Paris, some years ago, I have a shadowy recollection of my wife pointing out the Austrian rose: it seemed a wild sort of briar, hanging gracefully down from among some tall shrubs and trees, and waving its orange single flowers gracefully in the wind. My poor Amelia used to talk in raptures of a variety of this sort, with a dark spot like the cistus, which would be a very great desideratum for our gardens. I have frequently inquired for it at the Horticultural Gardens, but have never seen it growing there, nor indeed any sort of yellow rose, which surprises me very much. Does the Austrian rose grow wild in Austria, or what does its name arise from,

and has it had any share in producing those yellow roses which are this year so common, twos and threes in every nosegay of roses bought at Covent Garden? and also can you inform me the name of the French rose I have mentioned?

London, *June 7th*, 1841.

The Austrian Briar (*Rosa bicolor*) has received that name because it was first sent to this country from Austria; but it is a native of the north of Italy, Piedmont, and the banks of the Rhone in France, growing abundantly on the hills near Lyons. Its petals are of an orange red, or copper colour, on one side, and yellow on the other; and it is said to be a variety of the yellow Austrian rose, *Rosa lutea*. The Austrian briar has never been known to produce seed in England, or to have double flowers. The yellow Scotch rose is a hybrid, between *Rosa spinosissima* and *R. lutea*. Its flowers are semi-double, and they are not only produced in great abundance, but open freely, with very little care, in almost any soil and situation. Williams' double yellow Sweet-briar is a hybrid between *Rosa lutea* and *R. rubiginosa*, the common Sweet-briar; and *Rosa Harrisonii*, the best and by far the handsomest of all the new double yellow roses, was raised in America from seed of *Rosa lutea*, which produces seed freely in that country, though it very rarely does so in England. I suppose the French rose alluded to must be the Jaune Desprez, as that is of a pale yellow, or buff, and pink in the centre. The new, very large rose, *Rosa devoniensis*, is yellow in the centre.

All these roses, except the last (which is only in the Exeter Nursery, are in the Horticultural Society's Garden; and I suppose the success that has attended hybridising with *Rosa lutea* (which never used to produce seed in England) has occasioned so many more yellow roses to be grown now than formerly. The old double yellow (*Rosa sulphurea*) seldom produces perfect flowers; and for this reason, notwithstanding its beauty, it is seldom cultivated.

EXTRACTS FROM BOOKS.

ON THE CULTURE OF SILK.

[FROM AN ARTICLE ENTITLED "AGRICULTURE IN HINDOSTAN," IN THE QUARTERLY JOURNAL OF AGRICULTURE.]

The Italian mode of cultivation is as follows:—First, there are growers of mulberry-trees, who, when these have arrived at sufficient size to allow of the leaves being plucked without injury to them, pluck and sell them by weight to the breeders of the worms. Of the worm-breeders there are

two sorts;—first, those who sell the eggs, reserving a sufficient quantity for keeping up the stock; and next, those who purchase them merely to feed the animal until it spins its nut or cocoon. As the worm in the course of its various transmutations, being again called to life and activity, would otherwise break all the fibres it had spun in eating its way out, this nut or cocoon is either baked or suffocated by steam. The latter is the method preferred; the cocoons being apt to be partially burned in the process of baking, unless great care be used in the operation.

A third variety of breeders purchase the cocoons from the second; and their province is to draw the fibres from them to form the thread. This process is termed reeling or filaturing the silk, and is thus performed:—The cocoons being first sorted, according to the various sizes of the fibres upon them, the quantity of cocoons intended to form the thread is then put into a small basin of hot water, which enables the fibres to run freely from them. These fibres are then passed through an eye in a small wire, held above the basin, and, in joining them together, a slight twist is given, which produces an elasticity in the thread; and the greater this is in degree, the more valuable is the silk reckoned.

This process finished, the threads are fastened to a reel, which is not circular, but should be formed of four projecting sticks of wood, with even tops to them, about one inch broad and four inches wide, with borders at each end to prevent the silk in reeling from slipping off. The reel is then turned round, and the fibres drawn from the cocoon till a skein is made. Particular care should at the same time be taken that the cocoons, during the drawing of the fibres, be brushed with a small birch broom, in order that they may be properly loosened, and the cocoons kept free from the pluff which gathers upon them; for this renders the thread woolly and wasty; and great attention should be paid that only a given quantity of fibres be drawn at a time, otherwise the thread becomes uneven, a thing most prejudicial to the quality of the silk, and essentially spoiling it for many purposes of manufacture.

The Chinese method of reeling is a still more simple process. First of all, a small jar is placed on the ground, a charcoal fire is kindled within, and over it is placed a basin of water. When the water has attained a certain temperature, the cocoons are thrown into it. While this mode of softening is being performed, a small wheel, made of bamboo cuttings, is placed on the edge of the basin. This wheel is but two inches and a half in diameter, and has a small eye in front of its stand, through which the thread of the silk is to pass as it rises in fibres out of the basin, during which process it is cleaned from adventitious matter, and freed from

too much moisture. The skeins of silk are then wound on the large reeling-wheel, which is placed on the left-hand side of the basin.

Our Chinaman then sits down, all being ready, in front of the whole, and putting one of his chop-sticks between the fore and middle fingers, and the other between the middle and ring fingers of his right hand, he uses them as dexterously as if these were mere elongations of his fingers, and thus escapes the scalding of the hot water. After stirring the balls about till the gum which glues the thread together is dissolved, he commences unravelling such as run most freely, and, making up eight or ten of them into a common thread, passes it through the small eye in front of the stand of the small wheel. This thread is first conveyed from the eye over the top of the small wheel, and then brought back again by the bottom, where it is twisted into a kind of easily-running knot, giving compactness and strength to the thread as it passes on to the large reeling-wheel, to one of whose spokes it is now tied. The large wheel is then turned with the left hand, by which the silken thread is wound up; and the small wheel being also thus caused to revolve, the cocoons are at the same time unravelled. While thus employed, the chop-sticks are not idle, for with these he gives a rotatory motion to the cocoons in the basin, by producing a vortex in the water, which keeps them continually revolving. He then goes on more rapidly and dexterously with his operations, increasing the speed of his wheels, and the application of his chop-sticks keeps up the vortex in the water, throws out the exuviæ, or skins remaining after the thread is run off, preserves the cocoons in clear running order, and keeps up the same number.

When a cocoon is nearly run out, he pushes another into the heart of the vortex, and makes it immediately to form part of the thread in hand.

Although this Chinese method must be acknowledged as inferior to that of Italy, it is owing much less to the defect of the instruments employed than to the carelessness of the reeler. There not being the same demand in India and China for the fine material as there is for the coarse raw silk, less attention has been directed to this important operation. A decided advantage which the Chinese possesses over the Italian instrument will be found in many circumstances. It requires very little fuel, can be managed by a single person, and used in the corner of the meanest hut. Hence it might be easily introduced into the habitations of the Hindoos and Mussulmans, and afford a means of employment which might prove greatly instrumental in raising them from their present state of abject misery to comparative domestic comfort; for, whatever Utopian philosophers may say, the tone of moral feeling is too apt to be regulated by the means of subsistence.

The next processes which silk undergoes—the winding and throwsting—have been in use among the Hindoos from immemorial time. A skein of raw silk is placed on a slight swift, made of bamboos, and a woman sitting on the floor makes the swift revolve with her foot. In her hand she holds a distaff, which receives the silk as it is unravelled. The distaff is then placed on the ground, and the skein is drawn off into silken bobbins. The process of throwsting is extremely tedious and complicated, as practised in the Deccan, where it seems to be confined generally to particular families.

The apparatus is quite rude, and worthy of the primitive ages. From a few bobbins, the thread is wound into skeins by a revolving wheel about a foot and a half in diameter. Each thread receives a twist in a particular direction by the revolving of the spindles, and passes on to the wheel.

This forms the weft for the weaver; but to form the skeins into the warp for cloth, they are transferred from swifts, such as those mentioned above, and wound upon distaffs, from every two of which the thread is run off upon single bobbins. These are carried back to the throwsting mill, to undergo the same process as was gone through before, when making the weft, with this only difference, that the two threads of each are now twisted into one, in a direction opposite to that formerly given.

When alluding to this process of Indian throwsting, Mr. Graham very pertinently observes, that "any person acquainted with the mode of twisting silk, or who may have seen an English throwsting mill, will readily perceive what a blessing the introduction of some part of our throwsting machinery would be among the Hindoos; that, by reducing the labour many hundred-fold, it would tend to cheapen a clothing of which all classes are particularly fond, and would increase its consumption to a very great extent, in a climate so peculiarly adapted to silken raiments."

So delicate is the nature of silk, that even the situation of the filatures for reeling it should be particularly attended to. They should be where the air is pure, temperate, regular, and dry, and in the neighbourhood of good soft water, which is of the utmost consequence, as none but what is soft, or made so by artificial means, would do. It is therefore always better to have the water drawn into a large cistern, and stand exposed to the sun for some time, in order that it may penetrate and soften it. Even a cloudy day will have an injurious effect upon silk, and reeling should, if possible, be avoided on such occasions. It has been remarked that, in Bengal, where they have several harvests, those silks which are filatured in the rainy season, are always much inferior in colour, and

more wasty and loose in thread. The valuable properties of silks are, that they be clear in colour, and that the threads be clear, even, and elastic. The clearness of the colour is produced by the pureness of the atmosphere in which the worm is bred, and the care taken to filature the cocoon in a proper situation. The evenness of the thread is dependent on the regularity of the number of cocoons used in producing it, and its elasticity is acquired by having pure soft water in use, heated to a degree somewhat tepid.

In China they have three kinds of worms; the largest, when fit for spinning, is about three inches long, and of a black colour. Three crops of a deep yellow coloured silk can be obtained yearly from this species. This worm is the most expensive; and four and a half frames thickly set with them are sold for two dollars. The worms on these will have consumed one hundred and eighty pounds of leaves in their progress, and will produce two pounds of pure silk. The cocoon produced by this worm is about two and a half inches long, and two in circumference, yielding strong sorts of silks used in the manufacture of Chinese broad-cloths. The second class of worm producing the white silk is extensively fed in China. It is smaller than any of the others, and completes its stages in twenty days.

The third kind resembles the common worm of India, but produces silk of a strong fibre, and completes its stages in twenty-three days. One hundred and eighty pounds of leaves are required to feed seven frames of the white worm, and rather more for the third kind. The seven frames are bought for a dollar, and will produce about a pound of pure silk. From each of the latter kinds, six crops a year can be obtained. From the first species the Tusset silk so much used by the Brahmins in Bengal is manufactured. It is of course, dark-coloured, and most durable, and might be introduced with great advantage into the south of Europe and America, where a dress light and cool, yet not costly, is much wanted.

MR. LAMBERT'S CONVERSAZIONE.

In the early days of the establishment of the Linnean Society, Sir Joseph Banks was in the habit of assembling around him, on stated days, all the most celebrated persons connected with botany and the other branches of natural history of that time. All newly-discovered plants, all important discoveries, and, in short, all that was interesting in these most interesting sciences, was there discussed, before it was given to the public; and as it is well known that new ideas are frequently elicited by the conversation of persons skilled in similar pursuits, which baffle all

the efforts of the mere closet student, there can be no doubt that these meetings were of the greatest service in promulgating and elucidating the natural sciences.

What Sir Joseph Banks's meetings were in his day, Mr. Lambert's are at the present time; and every Saturday during the London season, his reception-rooms are crowded with persons eminent for their learning or talents, not only Englishmen, but foreigners. Mr. Lambert is well known by his splendid work on the pine and fir tribe; and he probably possesses the finest library of botanical works in England. He has also a magnificent herbarium, containing, among other rarities, the botanical specimens collected by Ruiz and Pavon for the Flora Peruviana; the dried plants of Pursh, used for his North American Sylva; the dried specimens of Pallas, and those of many other celebrated botanists. Besides these collections, which possess a high degree of historical interest in addition to their intrinsic value, Mr. Lambert's herbarium is continually being increased by additions from every part of the world. Some time since he received a splendid collection of the Banksias and Proteas, those extraordinary plants of Australia, the novelty and magnificent appearance of which procured for the coast where they were first seen the name of Botany Bay. From the tropical regions of the western hemisphere Mr. Lambert has some extraordinary specimens of Cactus, particularly two of the muffs or crowns of the Old-Man Cactus (*Cereus senilis*), which are probably the only specimens of the kind in Europe.

Among the numerous other objects of interest in Mr. Lambert's possession, is a table of the Deodar, or Indian Cedar (*Cedrus Deodora*); the grain of which is fine and close, and thus, very different from that of the Cedar of Lebanon, the wood of which is inferior to common deal. There are many fine models of celebrated temples, and an enormous specimen of white coral.

The most extraordinary specimens of Mr. Lambert's collection of botanical rarities are, however, contained in what he calls his New Zealand room; but this demands a separate notice.

It is impossible for any person to be more kind and liberal than Mr. Lambert is, with all this power to oblige; for his books and his herbarium are always open to the use of all literary persons.

VISITS TO NURSERIES.

Waterer's Rhododendrons, King's Road Chelsea.—Of all the splendid gardens I have seen, I think I never met with one which appeared to me more beautiful than this. Let my readers imagine a tent, many feet wide and long, covering a garden entirely filled with rhododendrons, azaleas, and kalmias, all in full flower and in the highest state of beauty. Some of the tree rhododendrons were ten feet or twelve feet high, and among the different kinds were all shades, from the darkest crimson to the palest pink; all the colours being softened and harmonised by the shades thrown upon them by the canvas covering. As rhododendrons are generally nearly out of flower, I was quite surprised to find those of Mr. Waterer in all their beauty; but the fact is that they are preserved by the canvas covering, which will keep them in a fresh and growing state for some weeks. They are really so beautiful, and the price of admission is so low, that every lover of flowers should pay them a visit. What adds to the wonder is, that they have all been removed, when just bursting into flower, from Mr. Waterer's nursery at Knaphill, in the neighbourhood of Bagshot, several miles from London, and apparently without sustaining the slightest injury.

Mr. Catleugh's Geraniums (*Pelargonium*).—I had heard so much of these geraniums, that I suppose I could not fail to be disappointed, for the imagination always very far exceeds the reality of everything, and probably this was the reason that I did not like Mr. Catleugh's plants. They were, however, too large to please me, and the immense number of flowers made each appear smaller than it would have looked on a smaller plant. The nursery contains very little of any interest but geraniums, and they appeared almost innumerable.

Mr. Knight's Exotic Nursery.—We called here to see the white rhododendrons in flower, which were standing in the open ground, and which I have before mentioned (p. 161). They were very beautiful, much more so indeed than I could have supposed.

VISITS TO PRIVATE GARDENS.

Mrs. Lawrence's at Ealing Park. Beautiful as Mrs. Lawrence's plants always are, I think her heaths surpass anything I have ever seen in her grounds. She has lately had a house built purposely for them, and their beauty is beyond anything that the warmest imagination could have conceived of such plants. For my own part I never was very fond of heaths, but a sight of Mrs. Lawrence's heathery has quite converted me, and I acknowledge, that grown as she grows them, they are splendid plants.

There is so much to admire in Mrs. Lawrence's grounds, and so much to describe there, that it would take more time than I can now spare to give a proper account of them, particularising all their beauties; but one part I must mention—I allude to the orchideous house, in which, in addition to the usual orchidaceous plants, are gigantic specimens of papyrus (recalling those dreams of ancient Egypt, that once haunted my imagination), widely-spreading ferns, a splendid specimen of *Nepenthes distillaria*, and, in short, such a collection of those plants which only exist in shade, heat, and moisture, as is rarely seen. It was not, however, only with the beauty of the plants that I was so much delighted: it was the admirable arrangement of the house itself, and the effect produced by the deep shade thrown upon it by the gigantic leaves of the tropical plants, while the ear was soothed by the murmuring sound of dropping water. The contrast afforded by this house to the scene presented by the adjoining flower-garden, bright with scarlet *Verbenas*, *Salvia patens*, *Fuchsia fulgens*, and all the vivid colours of modern flowers, was very striking.

THE HORTICULTURAL FETE.

This was very inferior to the last, as neither the company nor the flowers were so brilliant as usual. The orchideous plants were, however, exceedingly fine, and one of them, *Dendrobium fimbriatum*, sent by Messrs. Rollison of Tooting, was perhaps unique. It was grown in a kind of basket suspended from the roof, and racemes of its large bright orange flowers hung down all round. A specimen of *Aérides odoratum* had several spikes of flowers hanging down, and the Cattleyas were magnificent. The day was cold and very disagreeable, and the company crowded into the tents to keep themselves warm, so that it was very difficult to see the flowers.

FLORAL CALENDAR.

JULY.

The season for budding roses extends from July to September; and as it is an operation admirably suited to ladies, from its requiring skill rather than strength, I shall here give some directions for performing it. The first thing necessary is to procure a proper knife; that is, one with the haft made thin at the end for the purpose of raising the bark after the incision is made: the knives usually sold for budding are sharply pointed, but if one can be procured with a round point it will be found easier to manage. Some bast matting must then be pulled into ribbons, or strands

as they are called, and laid in water to be ready. A stock must then be selected; and this may be either an old tree-rose, or a wild briar transplanted from the hedges the previous year, or a wild rose raised in the garden from seed, and two or three years old, or a sucker sprung from the roots of some garden rose. When the stock is selected, a small part of the stem must be chosen, and all the side shoots above and beneath it, except those forming the head of the stock, must be cleared away. An incision should then be made in the bark, about half an inch long, horizontally; and from the centre of this a perpendicular cut, one or two inches long, must be made downwards. The great art in doing this is to cut entirely through the bark without wounding the wood; and it is for this reason that I think a round-pointed knife better than one with a sharp point; as it is very difficult with the latter to avoid wounding the wood. The bud must then be prepared by cutting it out of a shoot of the current year's growth. This is done by inserting the knife about half an inch above the bud, and then cutting downwards, so as to take out the bud with the wood of about half the thickness of the shoot. This piece of wood must then be separated from the bark, without injuring the bud; and this is the most difficult part of the whole operation, as if it be done carelessly, the eye of the bud will be probably pulled away with the wood, and the bud will be rendered useless: the separated bark must, therefore, be carefully examined on the inner side, and if no hole is found where the bud is, it is in a proper state. The bark of the stock must then be carefully raised with the haft of the knife on each side of the perpendicular incision, and the bud, being first reduced to the proper size, must be slipped carefully in. The bark of the horizontal incision is then raised to admit the upper part of the bud, and the operation is finished, except tying the stem several times round with the strands of bast matting in order to keep the bud in its proper place.

In about a month, if the bud be found to look full and fresh, it has become united to the stock, and the bandage may be loosened to allow it room to swell; and when the operation has been performed in July, the head of the stock is generally taken off, about a week afterwards, in order to throw all the strength into the bud. If, however, the operation be deferred till August or September, the head of the stock is generally left on till spring. All the shoots below the bud should be rubbed or pinched off as soon as they appear.

Greenhouse shrubs, particularly those in balconies, will require watering twice a day in hot weather during this month: but care should be taken, either to keep them without saucers, or to empty the saucers as soon as the water has passed through the earth in the pot, as stagnant water will injure the roots, and soon make the plants become stunted and sickly.

1 Oxylobium Sp. 2. Podolobium Murrayana.
3. Podolobium trilobatum L. 4. Podolobium Bidwelliianum

The Description of the Plate will be given in the September Number.

ON THE CULTURE OF BOUVARDIA TRIPHYLLA.

The first time I ever saw a *Bouvardia triphylla*, or *Houstonia coccinea*, as it used then to be called, was at an old-fashioned house in the country, where it had been nursed in the greenhouse for years untold, and had probably at last grown so tall and straggling, that the new gardener, a clever young Scotchman, had pruned it into the shape of a standard rose-tree, so that when I saw it, it formed the prettiest object imaginable in the middle of a group of greenhouse plants turned out on the lawn, with its head of brilliant scarlet trumpet-shaped flowers on a stem about four feet high. To see, admire, and inquire the name, were the work of a moment; and, as the object made a decided impression on me, the name was one which I did not forget, as one is so apt to do when a less interesting object is in question. This plant was somewhat out of fashion at the time—at least I never happened to see it in the nurseries; but on mentioning it to a kind friend he immediately presented me with a young plant, and I determined to train it into a miniature tree like the one I had seen. There were, when I received it, a number of young shoots rising from the surface of the pot; and as I was totally ignorant of its culture, I concluded that these shoots were exactly suited for making cuttings, and therefore I had the less reluctance to cutting them off all but one, which was to be the main stem of my tree. I put these cuttings in sand and covered them with a tumbler, but with all my care, though they continued fresh for a provoking length of time, they never rooted; and it was only on mentioning the circumstance, that I found this was one of those plants extremely difficult, or rather long held to be impossible, to strike, and that it is generally increased from the roots. In the mean time my stem grew about a foot high; I carefully picked off the side shoots, leaving only one or two at the top, which flowered and formed a small head. Nothing is easier to keep than this plant during the winter, and therefore it is highly to be recommended to lady gardeners and amateurs. The foliage withers in the autumn, and when that takes place, it has only to be removed to the back of the greenhouse, if there is one, and not watered unless a chance drop or two falls on it from the general watering; or, as in my own case, it may be put in a cellar or out-house late in the autumn, merely to protect the stem from frost. At the

end of April I took my plant out of the cellar and repotted it: the stem died partly down, but it soon put out several shoots from the part that was still alive, all of which I removed as before, but one; and, as this grew very strong, the sort of angle it formed with the main stem was soon obliterated, and it formed a tolerably straight stem, bearing this second year a superb head of flowers. The whole plant was about a foot and a half high, and looked extremely pretty on a stand among geraniums, which concealed both the pot and the bare stem. I always prefer this way of growing the Bouvardia for pots, its natural habit being to throw up a number of rampant shoots with coarse rough leaves, which have rather an unsightly appearance, unless when the plant is grown in the open border with plenty of air, where it flowers beautifully all through the summer, and till quite late in the autumn, and, I believe, is now even found to stand the winter if the roots are covered with manure or litter, as the plant generally dies down to the ground. The third year, the winter having been very severe, the stem of my plant died quite down, and I was afraid the roots were dead also. I took up the plant some time after having potted it, and found it preparing to throw up shoots by a number of soft white growths about the thickness of vermicelli springing from the roots near the surface. This called to mind the manner of increasing it, and I immediately cut off several of these growths with a small piece of root attached to each, and planted them in a pot, covering them entirely with mould, and most of them grew. The proper method, however, is to cut off portions of the roots just previous to potting the plant for the season, and sticking them in a pot with one end a little above the surface, to prevent their rotting. Since my successful attempt at increasing, I have never been without a supply of plants, always amusing myself by training one or more into a tree, as they take a year or two to come to perfection, and are liable to die down to the ground. There is another species or variety of Bouvardia which has either been lately introduced or brought again to light, which I have never seen, but which I have heard is more brilliant and beautiful than my old favourite. No doubt the same treatment will apply to it, and perhaps you will inform your readers of the name of this species. [*B. versicolor* is not half so handsome as *B. triphylla*.]

I am also fond of growing Fuchsias in this way, and find they look extremely well in the stand, with geraniums, or other bushy plants in front; and I had one which for successive years I turned out of the pot into the border, where it was the admiration of every body (taking it up sometimes only a few days before Christmas, and removing it to my "refuge for the destitute," the cellar), till old age at last disabled it; the stem

became gnarled and thick, like the legs of a gouty old man; the sap refused to flow, and it stood the last year the picture of decay, with scarcely a vestige of foliage or flower. On taking it up the roots were found to be entirely without fibres, and apparently incapable of supplying nourishment to the plant.

BIRRHIA.

LONDON,
June 15*th*, 1841.

[I shall be most happy to hear again from this correspondent, as I think the above paper extremely interesting; and I shall take the earliest opportunity I may have, of trying myself to cultivate the Bouvardia in the manner recommended.]

ON THE CULTIVATION OF THE DAISY.

BY MR. CAMERON.

THE double-flowered varieties of the daisy (*Bellis perennis*), when cultivated with care, make a very pretty edging in any garden, but are more particularly adapted for small gardens in towns, where there is smoky atmosphere, and which may be easily managed by lady-gardeners. Few are aware that there are eight or nine varieties of the common daisy to be found under cultivation, several of which are known by name; such as the hen-and-chickens, the large carnation, the small carnation, dark-red, light-red, striped, and the white. Each sort should be planted together, and by being taken up, divided, and replanted three or four times during the season, may be made to flower nearly all the spring and summer. The daisy delights in a rich and well-manured soil, which should be dug over and well broken before planting. To form the edging, a beginning may be made in March by planting the plants in a continuous line on each side of the walk, two inches from the ground and three inches apart in the row; they will soon commence flowering, and continue in bloom until the latter end of June. To keep up a succession of flowers, one half of the edging should be taken up in May; the ground should then be manured and dug, the plants separated, and only the strongest selected for replanting. By the beginning of July, these will be in perfection, when the other half should be taken up and replanted as before, continuing replanting alternately one-half of the edging throughout the season. This taking up and replanting produces much more luxuriantly-flowering plants than are usually obtained by only removing the plants once a year, or less frequently. From the number of varieties already obtained there is likewise a consi-

derable chance of obtaining new and improved varieties from seeds; if any lady would take the trouble of trying the experiment, we might have a chance of seeing the daisy in as great perfection and obtaining as much notice as the pansy.

Birmingham,
June 16th, 1841.

HUMMING IN THE AIR.

BY MR. MAIN.

Nothing arrests the attention of a visitor to the open country downs or commons in the summer months more than the general humming in the air so beautifully alluded to by our elegant poet Thomson in the following lines :—

> "Resounds the living surface of the ground;
> Nor undelightful is the *ceaseless hum*,
> To him who muses through the woods at noon;
> Or drowsy shepherd, as he lies reclined,
> With half-shut eyes, beneath the floating shade
> Of willows grey, close crowding o'er the brook."

This rural sound is quite audible, and seems to proceed from every quarter at the same time, so that strangers look round in vain for the cause of this "ceaseless hum."

Naturalists have accounted for the sound by supposing it to arise from the innumerable insects which are everywhere on the wing in warm weather; and that the united buzzing from so many wings is the immediate cause of the continuous sound. This idea was for many years entertained by the writer, and it was only by accident that he at last discovered the true source of the humming in the air. In crossing an open pasture between two woods, the general hum was so uncommonly loud that he thought a swarm of honey bees was flying overhead. He looked up, but saw no bees, but an immense congregation of flesh-flies disporting high in the air, and scarcely visible, not only from their height above the ground, say fifty yards, but also from the rapidity of their flight, apparently in chase of each other. So numerous was the assembly that they formed a thin cloud, and to which there was no visible limit either to the right or left, before or behind the place of observation. The manner of their thus assembling is, no doubt, not confined to these insects; as many others are seen to do the same during their short life. Several of the gnat species are seen dancing in vertical columns on warm summer evenings, or under thick hedges on damp mornings. The tree-beetle, *Melolontha arborea*, and

the midsummer beetle, *M. solstitialis*, both rise from the ground after sunset, and congregate round the tops of trees, where, in their flight, they produce that deep and solemn hum so awful to the superstitious night-walker. The young earwigs, too, leave their cradles in the twilight, and soar aloft out of sight in the night air for the sake of society.

All these night-flying insects are guided by instinct to shun their natural enemies which find their prey by day. The rook, jackdaw, magpie, and house-sparrow, are all the unrelenting persecutors of the beetles; and the swallow tribe, and many other small birds, are equally destructive to the smaller species of flies.

How the flesh-flies above mentioned should so recklessly expose themselves to the hirundines so plentiful in the same region of the air in summer, can only be accounted for from their being of a larger size than swallows usually devour; and perhaps from an instinctive security they feel from their exceedingly rapid and devious flight in the air; affording them the same sense of safety against the swallows as the swallows themselves have against the most impetuous assaults of their sworn enemy, the sparrow-hawk.

It was in the forenoon of a calm and very warm day that I discovered this vast swarm of flies; and having occasion to pass and repass the same spot several times in the course of that day, I felt desirous to know when they dispersed, and where they took up their abode for the night. I watched them for some time late in the afternoon, and observed them singly descending towards a wood, to which I also repaired. There I soon found them clustered closely together upon the sunny side of the trunks of the trees, basking in the chinks of the bark.

It needs only be added that whoever hereafter may be struck with this purely rural sound, have only to look steadily up in the air, when they will probably discover the source of it, and be satisfied as to the cause of this (to many) unaccountable humming in the air.

Brompton,
July 1, 1841.

METHOD OF DETACHING A BRANCH BEARING FRUIT FROM THE TREE, AND PLACING IT IN A FLOWER-POT, SO AS THE BRANCH SHALL CONTINUE TO GROW AND BEAR FRUIT.

COMMUNICATED BY MISS SMITH.

For this purpose choose a small fruitful branch, well formed, of an apple tree, or any other fruit tree you may think proper, and proceed as follows. Take a tin vessel, shown in figs. 64 and 66. This vessel is made so as to open and enclose the stem of the branch to be removed; when made

fast to the branch, the vessel, fig. 64, is filled with earth, and the cup, fig. 65, which is also made of tin, is attached to the branch immediately above the vessel, fig. 64; the cup, fig. 65, is filled with water, in which

Fig. 65.

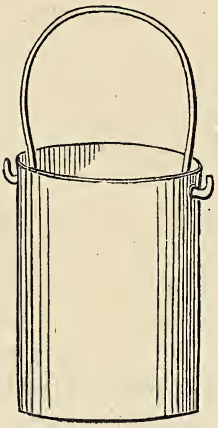


Fig. 64.

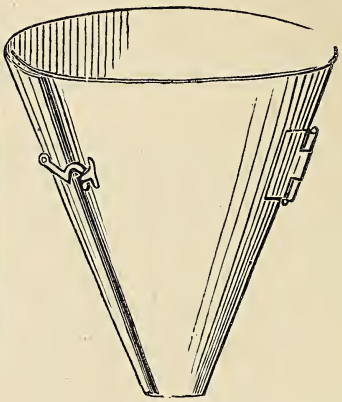
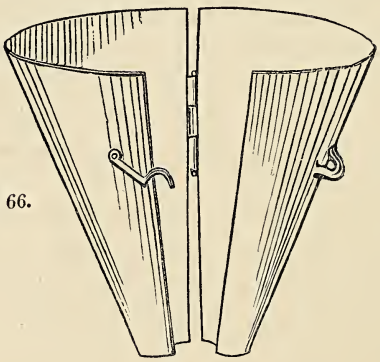


Fig. 66.



must be placed a worsted thread or small cord, allowing one end of the thread or cord to fall into the vessel, fig. 64, containing the earth. By this means the thread or cord acts as a syphon, and will conduct the water into the vessel, fig. 64, and keep the earth moderately moist. Care must be taken to keep water constantly in the cup, except when the weather is sufficiently damp to keep the earth moist; so that the part of the branch encircled by the vessel, fig. 64, will strike out roots into the earth by which it is surrounded; so that by the time the fruit is nearly ripe, the branch (now a tree) may be removed and placed in a flower-pot. This, however, must be done with great care, and in this

way: Cut the branch to be removed immediately below the vessel, fig. 64, and observe, this vessel containing the earth must not be removed from the branch till it is safely placed in the flower-pot, well filled with earth; the tin vessel may then be removed, but with such care as shall not disturb the earth attached to the roots. You will of course continue to water the plant as is usual; if the operation goes on well (as I have no doubt it will under your care), the fruit will ripen and the branch, rather tree, will continue to grow. The proper time to begin the operation is to place the vessels on the tree in the latter end of harvest, and remove the branch when the fruit is nearly ripe the following year. It has, however, been tried with success placing the vessels early in spring and removing when the fruit is nearly ripe in the same year.

Fig. 67 shows the appearance of the tree with the vessels appended to it.

R. H.

THE EDITOR'S TOUR.

On the 22nd of June I quitted London, with my husband and my little daughter, intending to pass through the north of England to Scotland. Our first resting-place was Derby, where we were most kindly received by Mr. Strutt; and the first visit we made from his hospitable mansion was to the Arboretum. I had not seen it since the day it was opened to the public, and I was quite astonished at the improvement which twelve months had made. The plants appeared all in a most thriving state; and some of the more rapidly growing species were already become trees. The hills and valleys were covered with fine smooth turf, and the roses and honeysuckles were in full luxuriance. One of the roses, the dark crimson moss, called Rouge de Luxembourg, was covered with its large splendid flowers, and I think I never saw any of a richer colour. While we were there a slight shower came on, and we took shelter in the cottage at the farther extremity of the garden. When we entered the porch we were struck with the sound of singing, many voices joining in chorus; and this we found proceeded from a large

party of persons from Nottingham (consisting of about 250) who had come over by the railway to take tea in the garden. We just looked into the large room, and when the party saw Mr. Strutt, every one rose, and with one voice thanked him for the pleasure he had been the means of their enjoying. I never saw anything more affecting, though it was but a moment, as Mr. Strutt, who is one of those beneficent beings who "do good for love, and blush to find it fame," turned away as soon as he found he was known, and we of course followed. The shower had now passed, and only left a few gem-like drops glittering on the flowers and leaves in the sunbeams, which had a brilliant effect. On the whole, the Derby Arboretum seems to give the greatest satisfaction to every one acquainted with it; and it must afford pleasure to a mind like that of Mr. Strutt, to find his endeavours to contribute to the happiness of his fellow-creatures so completely crowned with success.

Elvaston Castle, June 23.—The day after our arrival in Derby, we paid a visit to this extraordinary place, which I had never before seen. My expectations had been raised very high, but they were far exceeded by the reality. It is literally impossible to describe the coniferous plants. Rare kinds, which in other places are seen singly or in pairs, are here lavished with extraordinary profusion. Golden yews abounded every where; and these singular trees, which exactly resemble the upright Irish yews, except in their foliage, which is of a bright yellow, produced an effect quite different from anything I had ever before seen. The Deodar cedars and Araucarias, though numerous beyond all description, were not large enough to produce a decided effect; but the terraced gardens, with the trees cut in formal shapes, harmonised admirably with the general effect of the castle. I was particularly struck with some walks planted with lemon thyme, the plants of which, when crushed by the feet of persons walking along them, gave out a most delightful fragrance. The flower-gardens are very beautiful; but the grand feature of the place is the rock-work. This is placed on the banks of a long winding lake; and it is constructed on a scale which throws all the other rockwork I have seen into the shade. The masses of rock appear scattered in a natural manner through the valley, sometimes rising into steep precipices intersected with winding walks among them, which lead the visitor easily, and almost imperceptibly, to the summit. This rock-work must be seen to be understood, as the effect is much finer than could be imagined from any written description.

The kitchen-garden was in a state of perfection, both as regards training and abundance of fruit; and I was very much pleased with the observations of Mr. Barron, who appears to be as excellent a vegetable

physiologist as he is a practical gardener. One thing he mentioned struck me very much. It was the cause he assigns for the sudden decay of apricot trees, a large limb of which will sometimes die off in spring without any apparent reason. This apparent phenomenon Mr. Barron attributes to the injury the tree receives from frost during winter and early spring. The apricot tree blossoms early, and consequently the sap is in motion while the weather is very cold: the side of the branch next the wall is sheltered; but the other side has its larger vessels frozen and lacerated by the cold, to such a degree, that cracks are often seen in the bark, and the sap oozes out and congeals in the form of gum. As it is well known that nature possesses a wonderful power of adapting herself to circumstances, the sap circulates through the smaller vessels, which are sometimes dilated to permit its passage; and this circulation continues, so long as only a small quantity of sap is produced, without any apparent injury to the tree. If, however, the weather should suddenly become very hot, and a larger quantity of sap should be secreted, and forced through the branch, than the small vessels can dilate sufficiently to contain, they are torn asunder, and, the circulation being unable to go on any longer, the branch dies, so long after the first injury was received, that no one thinks of tracing its death back to the real cause. Mr. Barron added, that he had long suspected this to be the case, but that last year he proved it, by protecting some of his apricot trees during winter and exposing others; when he invariably found that large limbs of the latter died, while the others escaped quite uninjured.

Derby to Leeds, June 24th.—I cannot say that I am fond of railway travelling in general, but I certainly liked the ride from Derby to Chesterfield very much. The country is beautiful, even when seen by the transient glimpse afforded by the passage of a railroad train; and I only regretted passing so rapidly. After passing Chesterfield, and its curiously-twisted spire, the scene changed: the heavens lowered; and by the time we reached Leeds, the storm burst forth. We had no time to lose, as we were anxious to reach Manchester that night; and accordingly we actually visited the Zoological and Botanical Garden at Leeds in a thunder-storm. Nothing could be more unfavourable. Thunder and lightning, accompanied by violent rain, may harmonise well with ancient ruins and lofty groves, and have a powerful effect on the imagination, particularly if mixed with the sullen roar of the sea; but in a pretty, newly-made garden, near a manufacturing town like that of Leeds, nothing could more completely destroy the effect. In fact, the whole garden, with all its beds, flowers, and trees, seemed in imminent danger of being swept away by the torrents of rain that were pouring down

upon us, and turning our umbrellas into drooping fountains. However, we persevered, and walked entirely round the garden, with as much calmness as we could, and then drove back to the railway station.

Manchester, June 25.—Our ill fortune pursued us here, for the rain still descended in torrents. However, as we were anxious to proceed on our journey, so as to be in Edinburgh by the 5th of July, we drove to the Botanic Garden on one of the wettest days I ever chanced to venture out. The Botanic Garden at Manchester looked much better than the Leeds garden in the heavy rain; as the large bushy shrubs and trees which quite filled the beds, and formed alternately promontories and recesses on the thick grass, seemed rather to enjoy the shower than to be in danger of being swept away by it. The hothouses also were very splendid, and the plants in them were growing with the greatest luxuriance. The New Holland plants were superb; and Mr. Campbell, the curator, (whom we knew well, from his having been formerly gardener at the Count de Vande's, at Bayswater,) told us that he planted them in a kind of bed, having a layer, near the bottom, of lumps of granite. We noticed *Acacia decurrens* in full flower, which is worth remarking, as it flowers so much later than the other Acacias, frequently being in full bloom in the middle of July. Mr. Campbell told us that *Deutzia scabra* is quite hardy in the open garden; but that *Edwardsia microphylla* was killed last winter by frost—the branches being split and shattered, as is frequently the case with Heaths. There were fine specimens of *Protæa cynaroides* and *Dryandra plumosa*, and of a variegated aloe, eight feet high, which is supposed to be ninety years old. There was also a weeping *Melaleuca squarrosa*, which was more curious than beautiful. The central dome is forty feet high, and it was filled with Bananas and other tropical plants, planted in the free soil, and growing with such luxuriance as to emulate the palm-house at Messrs. Loddiges'. *Nepenthes distillatoria*, ten feet high, was in flower; and *Ficus elastica* had sent out thick roots from half-way up its stem, as it would have done in its native forests. *Aristolochia labiosa* was so old, that its corky bark looked like a twisted cable. The different kinds of *Cactacea* were very fine; and Mr. Campbell told us that they were grown in a soil composed of square lumps of turf and brick rubbish, as rough as possible, eighteen inches deep. The different kinds of *Anagallis* were also very fine, and they were grown in a mixture of loam, bog earth, and sand.

In the open garden, Mr. Loudon was very much interested in the forest trees; but the rain now became so violent, that I was afraid my little girl would take cold, and I was glad to shelter with her wherever

we could. When we quitted the Botanic Garden we drove to the Zoological Garden; but the rain here literally descended in torrents; and we could see nothing but a painting of the taking of Algiers, some pitiful-looking monkeys, and a very cross elephant. Of the plan of the gardens I can say nothing.

Liverpool, June 28th and 29th.—The severe cold Mr. Loudon caught at Manchester detained us some days in that town; and he continued so ill at Liverpool, that we were only able to pay a very short visit to the Botanic and Zoological gardens of that city. Of the first, I can only say that it appeared to me beautifully situated, and that the plants were growing with great luxuriance. I was particularly struck with the effect of the great number of plants of the gigantic cow parsnep. *Solanum crispum* stands well on an east wall; and *Aralia japonica* and *Clematis azurea* on a south one. Near the latter plants was *Stachys coccinea* in the open ground, growing luxuriously. There was a very handsome hybrid Saxifrage, between *Saxifraga crassifolia* and *S. ligulata*, which flowers in the open ground, as early as *S. ligulata* does in the house. Mr. Loudon was so ill that we were obliged to quit the garden abruptly; and owing to his illness, we did not visit any private gardens in either Manchester or Liverpool.

Crosslee Cottage, Archibald Woodhouse, Esq., June 30th.—On the 29th of June we sailed from Liverpool, on board the Princess Royal, a beautiful new steamer, very elegantly fitted up; and we arrived at Greenock the following morning, whence we proceeded, as expeditiously as possible, to this beautiful place. Crosslee Cottage is situated on the banks of the river Gryffe, a wild uncertain stream, which sometimes dashes along like a mountain torrent, and at others, leaves half its rough and rocky bed bare. The flower-garden here is perfection. The beds are laid out on turf, and kept with the utmost exactness; the places of the dead flowers being filled up as fast as they decay with fresh ones just coming into bloom. Mr. and Mrs. Woodhouse are exceedingly fond of their garden; and its beauty is another proof, if proof were wanting, of the ample manner in which flowers always repay the attention bestowed upon them. During the fortnight that has elapsed since our arrival, and during which Mr. Loudon has been confined to his bed, I have made many observations on the flowers here, which at a future period I shall give to my readers.

Crosslee Cottage,
July 13, 1841.

(*To be continued.*)

ON THE CULTIVATION OF THE TROPÆOLUM TRICOLORUM.

BY MR. REINECKE, BOTANICAL GARDENER, BERLIN.

(*Translated from the Garten Zeitung for November 16th*, 1839.)

Although the propagation of this very delicate twining plant is pretty generally known, I do not remember ever having read anything on raising it from seed. Allow me, therefore, to give you some account of my experiments on the subject.

In the month of May, this year, I was fortunate enough to ripen a great quantity of the seed of this Tropæolum on very fine flowering specimens in the garden of Mr. Decker, of this place. I immediately freed them from their outward covering, and sowed them in very sandy heath-mould. I first set the pot containing the seed in a pine-stove close under the window, but as I found they did not germinate there, I plunged the pot in a very warm hotbed, and here again I was unsuccessful, and notwithstanding the most attentive care for six months, I could not succeed in getting the seeds to germinate. As, however, I found them all in a good state, I tried the following experiment :—

I took them all out of the pot, and put them in one filled with pure white sand ; I set it on the warm flue of the pine stove, and kept the sand continually moist. In the course of two or three days I was greatly delighted to see that several seeds had germinated. As the plants began to develop themselves, I planted them singly in small pots, containing a mixture of heath-mould, with a great proportion of sand, and then set them to continue growing in a stove. It appears to me probable that plants of this Tropæolum raised from seed will produce larger tubers the first year than those usually do which are raised from cuttings.

ON GRAFTING THE TUBEROUS SPECIES OF TROPÆOLUM.

BY MR. REINECKE, BOTANICAL GARDENER, BERLIN.

(*Translated from the Garten Zeitung, March 6th*, 1841.)

Having already given an account of my experiments with the *Tropæolum tricolorum* raised from seed, I cannot refrain from communicating to the friends of gardening further observations on these beautiful twining plants.

Those I raised from seed were very strong, and flowered abundantly last June. The stalk soon withered off after flowering, and on examination

I found two or three tubers in every pot. Those that were on the bottom of the pot were of a round form, and all the others were elongated. I put all these tubers in pots filled with dry sand, and kept them in a shady cool place in the greenhouse all summer. In the month of December the round tubers began to germinate, when I immediately removed them from the dry sand, and planted them in sandy heath-mould. The other tubers of an oblong form (many of which were of the size of a small potatoe) put out roots, but did not send up a shoot till the end of the month of January, notwithstanding the greatest care and trouble that were taken with them.

It was this circumstance that gave me the idea of inserting young lateral shoots of *T. tricolorum* in these tubers as an experiment; and to effect this I took a young lateral shoot of an inch and a half long, and cut it obliquely. I then made a small incision in the side of the tuber and put in the graft, in the same way as the usual mode of grafting other plants, but without fastening or binding in the shoot, after which I put it under a bell-glass. After a lapse of fourteen days, I saw, to my great delight, the same shoot united and grown to the tuber; and at the end of February it had attained a height of eight or ten inches, and was profusely covered with flower-buds. This induced me to make the same attempts with other species of Tropæolums, such as grafting *T. brachyceras* and *T. tricolorum* on *T. pentaphyllum* and *T. tuberosum*, which fully answered my expectations.

ESSAYS ON ORNITHOLOGY.

BY MR. MAIN.

THE RAVEN TRIBE.

THERE are nine distinct species of the genus Corvus, the principal of which is the raven (*Corvus corax*). These birds are large and powerful, but not very numerous. In some parts of Great Britain, and particularly in Scotland, they are regarded as birds of evil omen, and their presence near a dwelling-house is thought indicative of the approaching death of one of the inmates. So strong is this superstitious feeling on the western coast of Scotland, that many a hardy fisherman of that country would sooner face the fiercest wind that ever blew, than one of these birds. Ravens build their nests in lofty trees; and White of Selborne has immortalised a pair, who built their nest for many years in the fork of a lofty oak, the trunk of which was slender, and free from branches to a great height. At last, this tree was to be felled; and the time fixed upon

was February, when the ravens, who build early, had just made their nest. Notwithstanding all the noise made by the woodman who was employed to cut down the tree, and the violent shocks the poor bird must have sustained, she continued sitting till the fall of the tree, when she was killed by the boughs. Ravens never have large broods, generally indeed there are only two or three young in each nest. They live chiefly on carrion, which they are said to smell at the distance of two or three miles; but they prey occasionally on the youngest and weakest of the lambs, if they can find an opportunity of attacking the flock in the absence of the shepherd. Wherever ravens abound, it is therefore necessary for the shepherds to watch during the lambing season; but luckily they are noisy birds, often uttering their hoarse croak, whether on the wing or at rest; and consequently they always give sufficient notice of their approach. Four or five ravens are often seen together at a certain season, and seemingly engaged in serious warfare. This is when the old ones are driving their young away to shift for themselves. The domestic hen, when she has chickens, has a dread of the raven, and with good reason; for if she strays from home, there is a risk that she may lose some of her brood. The crow is the only other bird that seems jealous of the presence of the raven: as the former flies after, and threatens to pounce on the latter, but is always received with an opposition which soon makes the crow retire.

The Crow (*Corvus corona*) ranks next to the raven, as he is an equally bold bird, and also lives on carrion. Crows are not gregarious. They build often in single trees, and rarely are two pairs seen near together. Nor will they allow any other bird to nestle, or even alight near their home. On this account they are excellent sentinels for protecting any field-crop, which other birds, such as rooks or wood-pigeons, would be inclined to feed on; for if any of these last-mentioned birds show themselves, they are instantly routed by the crows. The crows are no favourites of the housewife, for they will pick up and eat every stray egg they can find laid out of the hen-house; and it is amusing enough to see a crow watching a vagrant hen or duck which may be about to lay. The crow seems to know perfectly well what is going on; for no sooner does the hen cackle, or the duck flutter from the bank into the water, but down he drops, seizes the egg, and carries it off to be eaten in safety. After the breeding season crows become more sociable among themselves; for then parties may be seen of eight or ten together; though they often quarrel about a dead mole or other animal they may chance to find. They fight with their feet more than with their bills, and grasp and tear each other most severely.

The Rook (*Corvus frugilegus*) is a species somewhat larger than the

crow, and, though of the same colour, it is very different in its habits and economy. These birds are gregarious at all times, nestling, feeding, and always roosting in flocks. Rookeries are common everywhere in wooded countries; and they are often near the habitations of man. Even in London there are several rookeries. This habit, as well as living in societies, appears to be an instinctive precaution for mutual safety; as the larger and wilder birds of prey are very fond of their callow young. The rooks begin to make nests early in the spring; and then it is diverting to observe the contests which take place among them for the possession of an old nest, or for a favourite station for a new one. They will even pilfer sticks from the absentees; though, when the thieves are detected, a battle is the consequence. Sometimes the pilferers unite to pull a neighbour's nest to pieces: and though the rightful owners fight valiantly in defence of their property, they are overcome by numbers, and obliged to relinquish the station altogether. When once settled, however, and though several nests are built close to each other on the same branch, they live afterwards in the greatest harmony. They seek their food in open fields and pastures; living entirely on the larvæ of beetles, moths, and flies, which they dig out of the earth with their powerful bills. On this account the rooks are the most useful of all others to the farmer; though few husbandmen have penetration enough to give the birds credit for their services. On the contrary, they are scandalised as their greatest enemies; merely because they appear to destroy the turf by pulling up the roots of some of the grasses to get at the maggot which is devouring both roots and stem; and also because, when the weather is so dry as to make the grubs descend into the earth, or so hard that the rooks cannot dig into it, they do, at such times, fall upon a field of wheat or barley, and steal and destroy without repugnance. But whose fault is this? Either a little keeper should be employed, or a few rags dipped in melted brimstone, and stuck upon sticks in the field, which would effectually scare the rooks away, and thus preserve the crop.

When the young begin to be feathered they are exceedingly clamorous for food; and it is as much as the old ones can do during the day to supply them, as they have often a considerable distance to fly to obtain what is suitable. On their return home with their pouchful, they are, though accompanied by many others, recognised by their own brood at a considerable distance from the nest. This is a remarkable instance of sagacity in the young; as the colour and action of all the other parents are exactly like that of their own; and how they identify them is unaccountable, though there is no doubt of the fact. Rooks are sometimes seen to vary in colour, being occasionally entirely white, or particoloured black and white: but this

variegation only continues till the first moult. In deep and lasting snows the rooks suffer greatly from hunger, and many die. At such times they become so tame as to alight among and feed with the domestic poultry; and they then visit the rickyards, and stray along the high roads, or any other parts of the naked surface of the ground.

The Jackdaw (*Corvus monedula*).—This talkative bird is only about half the size of the rook, and, though clad in the same coloured suit, his head is grey. These birds nestle in church-towers, old castles, or other lofty ruins, and sometimes in the useless chimneys of dwelling-houses. At all other times they associate with rooks, feeding alike, and roosting with them. Jackdaws are easily tamed, and will attach themselves to a house like a pigeon.

The Magpie (*Corvus pica*) is a well-known woodland character. His striking colours of black and white, his long tail, and constant chatter, make him conspicuous everywhere. These birds build a curious large nest, domed over, and well fortified with the sharpest thorn twigs; the entrance being on one side, and well lined with wool, which they will even pluck from a sheep's back for that purpose. The nest is made on the highest trees, and near the top of a rather slender branch to prevent the approach of climbing enemies. Sometimes the nests are made in thick and tall hawthorn hedges, in secluded parts of the country; and there, from the closeness of the surrounding branches, are as safe from enemies as if they were on the top of the highest tree. Some naturalists will have it that the hedge magpie is a distinct species; but this is not generally admitted.

Magpies are omnivorous: roots, seeds, or fruits, flesh, fish, or fowl—all is partaken of by them. They are naturally thievish, excessively inquisitive, and of most persevering impudence in meddling with what is not their own. Any loose article of metal, cloth, or paper, lying on the sill of an open window, will be purloined by Mag, if she happen to cast her eye upon it. Teaspoons are often stolen by them; and, though they can make no use of most of the articles they take, these birds seem to have pleasure in filching what other birds disregard. There is reason in stealing a silk purse, because it serves to improve their nest; but a loose piece of money they drop as soon as they have examined "the image and superscription." They are exceedingly fond of the eggs and young of other birds, and particularly those of the missel-thrush; and though the latter defend themselves with great spirit, they are often despoiled of both their eggs and helpless young by magpies.

The magpie, like the crow, is an alarmist; for no sooner does a bird of prey, a strange dog, cat, or fox come in sight, than the magpie sets up a loud chatter, which is a signal for all other birds to be upon their

guard. But, except expressing his fears and bestowing his abuse, he seldom dares to assault an intruder. We once saw a falcon flying over the fields, where we happened to stand observing him; at the same instant a magpie gave his note of alarm, and impudently rose in the air to abuse the falcon. But the latter, unwilling to be teased "by such a popinjay," stooped and struck the magpie fluttering and wailing to the ground, and then pursued his course as if nothing had happened. The poor astonished and wounded Mag with the greatest difficulty struggled into the nearest hedge, with a lesson he would not soon forget. Magpies are frequently tamed, and even taught to speak; but unless they are caged, they are noisy and great plagues about a house.

The Jay (*Corvus glandarius*).—This bird has somewhat of the manners of the magpie, and is also an alarmist, but is rather more modest in his behaviour. The plumage is beautifully varied, and the crown of the head is covered with long feathers, which the bird can raise like a crest at pleasure, and which gives it a very animated look. The chief food of the jay is acorns and beech-mast, or any kernelled or small fruit. These birds also eat insects and their larvæ, when other food is scarce. Their shallow nest is made mostly on the horizontal branches of dwarfish trees, eight or ten feet from the ground; a holly or fir-tree is preferred. The jay has much modulation of voice; his scream of fear is harsh and discordant; but when in a complacent mood he attempts to sing, and though without method, he introduces such a variety of notes as is quite diverting to a musical ear. His song is a p. p. fantasio, in the recitative style; and he may not be unaptly called the Paganini of the woodland choir. The jay is often caged and taught to speak, which some of them do very articulately.

The Royston Crow (*Corvus cornix*) has an ash-coloured head and body, and black wings and tail. The bird migrates, and never appears in great numbers.

The Cornish Chough (*Corvus graculus*).—These birds are somewhat larger than the Royston crow, the length being about sixteen inches. They are known by their orange-coloured bill and legs. They are frequent in Cornwall and Wales, but seldom seen in other parts of the kingdom.

The Nutcracker (*Corvus caryocatactes*) is a curiously-marked bird, the body brown, speckled with white; wings and tail black; the latter tipped with white. A very rare bird in this kingdom.

The above are the species of the genus Corvus known in this island. Some of them are useful as scavengers, others as insect-eaters. A few are occasionally mischievous, but they only prompt man to his duty, and therefore could not well be spared.

The following birds also belong to the Picæ division, viz.—

The Roller (*Coracias garrula*).—This is a very beautiful middle-sized bird, having greenish-blue and red-brown plumage, and forked tail. Exceedingly rare in this country.

The Cuckoo (*Cuculus canorus*).—These are well-known birds, as remarkable for their song, as for their economy in making other birds hatch and bring up their young. The cuckoo is a seasonal visitor, arriving between the twelfth and twentieth of April, and leaving soon after it has put its young to boarding-school. They are insectivorous themselves; and they seem to have an instinctive knowledge of the birds that choose such food as they seem to know will suit their own progeny. These nurses are mostly much smaller birds than the cuckoo herself; commonly the hedge-sparrow or wagtail are chosen; and though the young cuckoo soon outgrows the legitimate brood, and sometimes, it is said, actually throws them entirely out of the nest, the foster-mother is equally affectionate to the lubberly bantling so palmed upon her, as she is to her own lawful issue. Bringing up a young cuckoo also imposes a great additional labour on the foster-mother, as the young cuckoo is nearly full-grown before it can shift for itself; and throughout its nonage it follows its nurse, and claims for itself every fly or maggot its vigilant mother can catch. The young cuckoos do not leave the country till the month of October, and, like other migratory birds, instinctively wing their way to warmer climes. The female cuckoo, while ranging in quest of a suitable home for her egg, and which requires much more judgment than one would think she can possess, as she must lay her egg among those which are recently laid, otherwise the hatching would be irregular, and her design frustrated, does not seem to err in this point, instinct supplying the place of judgment; and then too, she is generally followed by one or more small birds, usually the Titlark, who seem to be anxious to drive her away. It is uncertain whether both sexes have the same call. We are pretty well sure that the female utters the notes which give their name; but we suspect that the male has a quickly-repeated note, of a very different sound from the other. We were long acquainted with this unusual call before we knew from whom it came. At last we found that it proceeded from the cuckoo. It is a loud, mellow, liquid note, produced in a tremulous shake through the throat, and which appears distended in the performance; the bird being always seated on the top of a tree when this note is sung. It has often been queried whether the cuckoo's common note be innate, or acquired. Unlike other birds, the cuckoo knows no parents, nor can the young learn of the old; and it has been proved by the late Mr. Sweet, that

a young one kept through the winter in this country, sung in the spring its natural note before any of its relations arrived, a proof that the note is innate and hereditary. Probably this is the case with all other birds. Their songs and calls are indications of their feelings; and where the organisation is similar, similar sounds and vocal inflections must also be the same.

The next genus, of which we have one species in this country, is

The Wryneck, or Cuckoo's Mate, (*Yunx torquilla*,) which is a bird a little larger and of a longer shape than the house-sparrow. The general plumage is ash-coloured, spotted with brown and black; tail barred with black. Two fore and two hind claws: this formation of the feet is necessary to enable the bird to cling to the bark of trees, where it finds most of its food, being provided with a long tongue for withdrawing insects from the holes and crevices of the bark. They make their nests in holes of trees, and lay four or five blue eggs. They are called the cuckoo's mate, because they arrive in this country and depart about the same time with the cuckoo; and wryneck, because they are mostly seen sitting on the topmost bough of a tree like sentinels, looking every way around; in which action their head appears to be raised on a pivot, from the facility with which the bird can turn his head in every direction without change of place. It is when so looking about him, the bird every now and then utters his simple song of the same note, six or seven times repeated in a short strain. This mirth and watchfulness united, appears to be an overture to attract the notice of, or spy the passing females.

REVIEWS.

The Botanical Magazine for July contains the following plants:—

Cyrtochilum maculatum (t. 3880). This very beautiful orchideous plant has been already figured in the Botanical Register; but it is so splendid a species, and the plate in the Botanical Magazine is so well executed, that we cannot regret to see it again.

Goldfussia glomerata (t. 3881). This is a stove shrubby plant from the mountains of Sylhet, with lilac flowers, which has been before figured in the Botanist. The flowers are much paler in this plate than I have generally seen them on the living plants in Knight's Nursery, and consequently any one seeing only the figure would think the plant less handsome than it really is. It is quite new, having been only introduced

last year; and it is well deserving of culture by all persons possessing a stove.

Callistachys linearis, Benth.; *C. sordida*, Graham (t. 3382). Great expectations were raised of this plant before it flowered, from the name of the crimson Callistachys having been inscribed on the paper of its seeds, when they were first received from Mr. Drummond, from the Swan River. The flowers, however, are not of a rich crimson, but partly yellow and partly red, neither colour being particularly bright or clear. It is a greenhouse plant, which may be planted out into the open ground during summer.

Stylidium ciliatum, Lindl.; *S. setigerum*, Dec. (t. 3383). A Swan River plant, with small, pale yellow flowers, which are more curious than beautiful. It is a new greenhouse perennial, but it is not worth the trouble of cultivating. The specific name alludes to the knobbed hairs which cover the whole of the flower-stalk and flowers, but which are so small that their curious construction cannot be seen without the aid of a microscope. There are said to be forty or fifty distinct species of *Stylidium*, all natives of the settlement of the Swan River.

Pentstemon campanulatus, Willd.; *Chelonè campanulata*, Cav.; *C. angustifolia*, Humb. et Kunth. (t. 3384). An old plant, which, under the name of Chelonè, was formerly well known in British greenhouses. The flowers are of a pale purple, tinged with yellow below. It is a native of Mexico.

Epidendrum Grahami (t. 3385). A new Mexican orchideous epiphyte, belonging to the group Encyclium. The flowers are pretty, and the plate is very well executed.

The Botanical Register for July contains—

Angræcum bilobum (t. 35). A very pretty epiphyte, a native of the shore near Cape Coast Castle. "The flowers grow in pendulous simple racemes, and are slightly but sweetly perfumed; their colour is white, with a slight tinge of black." It should be grown constantly in a moist heat, on a block of wood hung from the rafters of the house. Very little moss should be used, as too much is apt to make the tender part of the plant rot.

Ipomœa batatoides (t. 36). Botanists have long been puzzled to decide what plant produces the purgative drug called Jalap. It has long been well known that the drug takes its name from the Mexican town Xalapa, and that it was the root of a plant; but the difficulty was to find what plant it was. At first it was thought to be the upright Marvel of Peru; then a species of Exogonium; and lastly an Ipomœa, but of what species could not be exactly discovered. The fact is apparently that the roots of

several kinds of Ipomœa possess the same quality; but the species now figured, which is found in great abundance in the woods near Xalapa, is said to be that principally used in commerce. The tuberous roots of this species were sent home by Mr. Hortney last year, and the flowers which have been produced from them are extremely beautiful. The species requires a little heat, but not so much as that of the damp stove. It should be grown in equal parts of loam, sandy peat, and leaf mould. The flowers, which are of a rich purple, starred with bright crimson, stand out well from the leaves, which are not very numerous; and their effect when fully expanded is beautiful, from the brilliancy of their colours.

Potentilla insignis (t. 37). A very beautiful perennial, with bright yellow flowers, from Nepal, and requiring the same treatment as *P. atro-sanguinea.*

Cymbidium pubescens (t. 38). An Indian orchideous plant, with dark red and yellow flowers; the habits of which appear rather of a terrestrial nature, as it grows better in a well-drained pot than on a log of wood.

Salvia hians (t. 39). This species, which is a native of Cashmire, and has large blue and white flowers, is called "very ornamental" in the description; but it certainly does not appear to be so by the plate. It is a hardy perennial, growing about a foot high, and flowering in May and June. It was introduced in 1839.

Schweiggeria pauciflora, Mortius (t. 40); *Glossarhen pauciflora*, Dec. This plant seems to have been singularly unfortunate in its names. Glossarhen has nothing peculiarly agreeable in its sound; but it is harmony itself compared to Schweiggeria. Luckily the plant is a stove-shrub of no great beauty, and therefore as it is not likely to become popular, the name is of little consequence.

Among the miscellaneous plants which are described in the Bot. Reg., but not figured, are two which will probably prove of general interest, viz., *Fuchsia cordifolia* and *Philadelphus mexicanus*. The Fuchsia has a compact bushy habit of growth, with a red stem and large heart-shaped leaves. The flowers bear some resemblance in shape to those of *F. fulgens*, but they are produced singly, and the colour of the tips of the sepals and the petals is greenish yellow. The tube of the calyx is about two inches long, and of a bright scarlet. The Syringa is a dwarf plant, not about a foot high, a native of Mexico. The flowers are large, cream-coloured, and delightfully fragrant. It is quite hardy, but will bear forcing well.

THE BOTANIST for July contains—

Hibiscus splendens. No. 225. A showy Australian species, which has been frequently figured before. The flowers are very large and fine,

having been known to be nine inches in diameter, and these are of a beautiful pale bluish colour.

Epidendrum nutans. No. 226. A very fragrant species, introduced in 1793.

Syphocamphylus revolutus. No. 227. A stove plant, introduced in 1839. The flowers are of a reddish purple, and much less beautiful than those of *S. bicolor.*

The Botanic Garden for July contains—

Tigridia conchiflora. No. 793. An old and well-known plant, much less beautiful than its congener, *T. pavonia.*

Monarda Russelliana. No. 794. A very handsome species, with cream-coloured flowers, tinted with pink.

Anemone montana. No. 795. A very beautiful purple Anemone, with star-like flowers, a native of Switzerland.

Scabiosa Webbiana. No. 796. A white-flowered Scabiosa, from Mount Ida, introduced in 1818.

RETROSPECTIVE CRITICISMS.

CULTIVATION OF THE BALSAM.

In an article on the cultivation of Balsams (p. 147), it is stated, that "the seeds should be used as fresh as possible," as they will not keep good more than a year. The using of fresh seeds is indispensable, where the individuals find any difficulty in rearing their plants; as fresh seeds shoot more vigorously, and the plants will be more robust: the flowers, however, will be more generally single, and the colours less broken, than when old seed is used. Those who wish to grow Balsams in perfection never use seeds of less than three years old, and are likewise very particular in saving their seeds from the most double and distinctly marked flowers, which to be good should consist of three colours as distinctly marked as a good Carnation. There are, it is true, many good self-coloured Balsams deserving also of cultivation. The grand secret in growing Balsams is never to allow the plants at any stage of their growth to get what is termed "drawn up;" as if they once get drawn up, they never afterwards can be made handsome plants. To prevent this they must have plenty of air, and progressive shifting from the time the seed comes up until the plants show for blooming.

AQUATIC PLANTS.

Aponogeton distachyon, recommended as an aquatic (page 149), is one of the most desirable for that purpose; and although usually considered a greenhouse aquatic, will be found to be perfectly hardy, and to continue frequently to produce flowers even in the middle of winter, when the season is mild. The flowers are also remarkably sweet, their fragrance much resembling that of the Hawthorn. On this account, the plants should be placed near the margin of the pool, for convenience of gathering; and they may be kept several days in a room by placing them in water. To flower the plants well, they should be planted in the soil of the basin at twelve to eighteen inches of depth of water. *Calla æthiopica* will seldom suffer in ordinary winters, if placed in the same depth of water; as, although the leaves are destroyed, the frost never reaches the roots.

QUERIES AND ANSWERS.

Madam,—I am a reader of your nice little work, the Ladies' Magazine of Gardening, and as I am anxious to raise some Heaths by seed, I should be obliged to you to let me know, through the medium of the above-named work, whether what appear to be the anthers of the stamens when the flowers are withered, are the seeds; and if so, whether they should be sown in peat and sand, and at what season of the year? But should seed not be the best mode of increasing this beautiful tribe of plants, perhaps you will inform me whether you think that I should have better success with cuttings, and kindly give me some directions for the work. E. H.

It is evident that the flowers of my correspondent must have withered without producing seed. She had better purchase some seed of a respectable nurseryman; and then treat it as directed in the following paper on the cultivation of Heaths. The paper appeared about fifteen years ago in the Gardener's Magazine, but it is so good, that I think it well worth reprinting.

"The most general (and I consider the best) time that large collections of seeds of the Cape Ericæ arrive in this country, are the months of July and August: from the beginning of the former to the end of the latter month, or perhaps later, is a favourable time for sowing them; they should not be sown thick, for if the seeds are good, they are weakened by being close, and liable to injury by thinning them out in the seed-pots. Seeds of Ericæ I have known to vegetate well after being twelve years in this

country. The soil for the seeds should be rather sandy than boggy, and the pots well drained, to allow a free passage for the superabundance of water given during the winter months; though, until the seeds shall have vegetated, I do not consider any quantity of water detrimental. From various causes, all the species do not vegetate at the same time; those which first come up should be separated from the rest and exposed to the air, and receive less water than those not yet up. The drier the plants are kept through the winter, there is the less chance of their damping off, and they will be hardier and in a fitter state for potting early the following spring.

Soil for first potting off . . . sandy peat, $\frac{3}{4}$, sandy loam, $\frac{1}{4}$.
First shifting . . . . . sandy peat, $\frac{1}{2}$, sandy loam, $\frac{1}{2}$.
Second ditto . . . . . sandy peat, $\frac{1}{4}$, sandy loam, $\frac{3}{4}$.
Third, and, if possible, final shifting, sandy loam only.

"To show the propriety of such treatment, I have selected a few specific names from the above-mentioned list (conceiving that they are more generally known), and stated the nature of the soils and situations in which they are found in their native wilds, and trust that this will assist the intelligent cultivator to arrive at a perfection in their growth, and in prolonging their existence, hitherto rarely attained, but so much desired by most cultivators, who at present turn from Ericæ in despair, and content themselves by fostering less beautiful plants.

"Ericæ do not like frequent shifting, nor do they long thrive in soil that is finely sifted; stones, or even broken fragments of garden pots, of one-fourth to one-half inch in diameter, seem beneficial to the health of Ericæ, while finely-sifted soil consolidates into an unwholesome and stagnant mass, preventing the free passage of superfluous water.

1. *Linnæoides*, *tubiflora*, *colorans*. — In running waters and springy grounds, a black vegetable soil.
2. *Albens*, *ampullacea*, *retorta*, *ardens*, *fastigia*, *fascicularis*. — Shattered sand, stone rocks, little or no soil, the roots embracing the stones in the crevices.
3. *Caffra*, *eriocephala*, *gelida*, *Halucacaba*. — Similar situations as No. 2, but thrive more freely in the moist clefts, 3000 feet above the sea.
4. *Viscaria*, *Blærioides*, *viridiflora*. — Decomposed sandstone, shaded by Scirpoideæ, &c.
5. *Sebana*, *sexfaria*, *Plukenetiana* *baccans*. — Decomposed schistus, lower parts of the mountains and secondary hills, exposed to drought.

6. *Massoni, calycina, retorta, Walkeria, gracilis.*	In pure sand, exposed to heat and drought on the mountains, from 2000 to 5000 feet above the sea level.
7. *Mammosa, nutulaflora, corinthoides, ignescens, grandiflora.*	In sand on the lower plains, frequently on spots abounding in natron.
8. *Vestita, filamentosa, cerinthoides, cruenta, versicolor, triflora.*	In loam with iron pyrites on the exposed plains and secondary mountains, enduring drought at times for several months.
9. *Urceolaris, persoluta, arborescens.*	Decomposed schistus, on the streams, in deep shade and glens.
10. *Vestita, versicolor, discolor, hirta.*	In stiff loam, and margins of woodlands, moist glens, and surrounded by various Pelargoniums, Scirpoideæ, &c.

"*E. cerinthoides* is spread more extensively over the Cape colony than any other species; it thrives best in the most exposed situations.

"The soils in which Nos. 1 and 4 are found, approach nearly to some of our bog soils, but not precisely so; so that, excepting Nos. 1 and 4 as above, no bog earth is wanting; it only serves to weaken the growth where a good sandy loam would strengthen it, and insure good flowering plants for years. Fire heat, and a long confined atmosphere and smoke, are injurious to Ericæ; fresh air ought to be admitted freely, for although the finest species come from a warm country, yet they withstand several degrees of frost. Some greenhouse species will bear some British winters; always better if in a northern exposure." (*Gard. Mag.*, vol. 1, p. 363.)

EFFECT OF SOIL ON THE COLOURS OF FLOWERS.

In a late tour through the midland parts of England, I observed that the light-coloured wild Poppies grow in a strong soil, the dark ones in a gravelly soil, the variegated ones in a loamy soil. I remarked, also, a similar difference of colour in the herb Robert, Ragged Robin, and other pink and reddish flowers. Now, what I want to know is the cause of this, and also whether the same variation of colours might not be produced by growing the plants in different kinds of soil in a garden?

A. L. Johnstone, N. B.

July 3rd, 1841.

CHANGE OF COLOUR IN PINKS.

MADAM,—I am taking in the Ladies' Magazine of Gardening, and am greatly interested in the work, and find in it much useful information. I had some very fine-coloured Pinks last year; to my great surprise, this summer the blossoms are perfectly white; to what may I attribute this, and how shall I rectify it? I shall be glad to have this query answered in one of your future numbers.

T. M. B.

YELVERTON RECTORY,
June 16th, 1841.

The above queries may be considered in some degree as answering each other. I think it very probable that the change of colour complained of by my correspondent, T. M. B., arises entirely from the change of soil. I shall, however, give an article on this subject in my next, after I have made some further inquiries respecting it.

KEEPING PLANTS IN GLASS CASES.

Have you forgotten your promises respecting the glass-cases of Sir John Robinson?

H. S.

SHENSTONE, NEAR LICHFIELD,
July 6th.

I have not forgotten my promise; but hoping to be in Edinburgh in a few days, when I shall probably see the cases in question, I will defer my account of them till next month.

RAISING ROSES FROM SEEDS.

Can you tell me how to raise roses from seed?

IDEM.

The following directions are those of a practical man and an experienced rose-grower:—

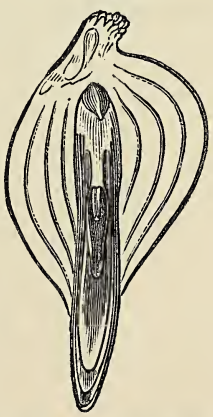
"In October, I collected the ripest hips of the red officinal, Portland, and velvet Roses. These three sorts seed freely here. They were growing among the finer sorts, which seldom ripen any seed. After gathering the hips, I laid them on a stone-paved floor, and rubbed them under a brick, to soften the seed-vessels; then I rubbed them one by one between my fingers. Of this mass I had about two quarts. I sowed the seed immediately on a wall-border with an aspect opposite the sun at eight o'clock in the morning. The soil was sandy loam. I covered them half

an inch deep, and added an inch of sawdust to keep the bed from caking in winter. I removed the sawdust about the middle of the following March, and in the end of that month the plants began to appear; but in a few days I found that the small birds picked them up as soon as their seed-leaves appeared above ground. I put hoops over the beds, and threw a net over them, so as to exclude the birds. The plants continued to come up till September, when mildew attacked them, and in a short time deprived them of their leaves; by counting the plants on a square foot, I found that the bed contained about eight hundred. As winter set in I sifted some fine sand among the plants, but in spite of all my care, the weakest of them died before the next March. When I took them up, the living plants amounted only to about a hundred. I planted them in rows a foot separate each way. A few more died, but what remained grew vigorously, and stood their second winter without a death. I did not at all prune them; and the following summer they have all grown well." (*Mem. Cal. Hort. Soc.*, Vol. 5, p. 63.)

FLORAL CALENDAR.

In this month of August all the bulbous-rooted plants belonging to the Lily division may be taken up and examined, and, when necessary, reduced in size before replanting. It must, however, be observed that all plants with scaly bulbs must not remain long out of the ground—not more than two or three days at farthest. This is the more remarkable as it is so different from the habit of the Hyacinths, Tulips, and other plants with tunicated bulbs. As some of my readers may not be aware of the difference, they have only to examine a root of the Crown Imperial, or of any kind of Lily, and compare it with that of a Tulip. If they will cut open the latter, they will find it to consist of a number of coats, one over the other, with the germ of the flower in the centre, as shown in *fig.* 68; whereas the bulbs of the Lily tribe consist of a number of scales only attached at the base. All the plants with tunicated bulbs flower best if taken out of the ground, and kept dry for a month or six weeks, at least, every year; and all the plants with scaly bulbs, when taken out of the ground, should be

Fig. 68.



replanted as quickly as possible. The seeds of bulbous plants are generally sown in August. They should be sown in either beds or boxes, in very light sand loam, and slightly protected during winter. They are, however, scarcely worth sowing, as they are generally a long time (from three to five years) before they flower.

The seeds of annuals may be sown in August to stand the winter; and thus treated, many kinds will become very fine. Mr. Woodhouse, at whose house I am now staying, (Crosslee Cottage, near Paisley,) tried this plan some years ago, with the common candy tuft (*Iberis umbellata*). He sowed the seed in the open ground in August, and took up the plants and potted them about the end of October. He kept them in a frame during winter, and planted them out in spring. Thus treated, one plant was three feet and a half high, and nearly six feet in circumference; and the others very nearly as large. The flowers were magnificent, and the only difficulty was to prevent them from being broken by the wind, which is very high in this part of the west coast of Scotland, but which would probably not be troublesome in a more sheltered situation. The plan is worth trying with other plants; and I strongly recommend it to all lovers of annuals.

August is the usual month for pruning Geraniums; they should be cut down to within a few eyes of the wood of the last year. They should then be turned out of their pots, the balls of earth somewhat reduced, and they should be replaced in pots of nearly the same size as before, and the space supplied with abundant drainage, and some fresh loamy soil. They should then be gently, but regularly, watered for a few weeks, and kept in the shade till they begin to grow. They should then have the advantage of a little heat, and plenty of light; and the pots should be turned daily, to keep the plants well shaped and bushy.

Helichrysum spectabile.

HELICHRYSUM, *Lin.* THE EVERLASTING FLOWER.

Lin. Syst. Syngenesia Superflua. *Nat. Ord.* Compositæ.

Generic Character.—Receptacle naked. Pappus hairy or feathery. Involucre imbricated, radiated. Ray coloured.

Description, &c. The common yellow annual everlasting, *Helichrysum bracteatum*, is so well known in gardens that it needs only to be mentioned to recall its image to all my readers; and *H. macranthum*, though only lately introduced, has become almost as great a favourite. Most of the species are natives of the Cape of Good Hope, and these are only half-hardy in British gardens; and many of them are greenhouse shrubs. The colours of the species are generally yellow or purple, but some of the kinds are white, pink, or cream-coloured.

1.—HELICHRYSUM SPECTABILE, *G. Don.* THE SHOWY EVERLASTING.

Engraving.—Our Plate 9.

Specific Character.—Stem erect, glabrous; leaves oblong-lanceolate, glabrous, shining, rather scabrous along the margins, entire, lower ones subspatulate, narrowed into the petioles; heads homogamous, corymbose, on long bracteate peduncles, lateral peduncles longer than the central ones; bracteas small, lanceolate; scales of involucrum white, mucronate at length, split at apex; outer ones ovate, shorter, inner ones longer, lanceolate; receptacle naked; pappus scabrous or pilose, bearded at apex.—*G. Don.*

Description, &c.—This species is a native of the Swan River settlement. The stem is two or three feet in height. The leaves are somewhat stem-clasping at the base. The scales of the involucrum are green at their bases, the outer ones are short, but gradually increase in length; but those next the flowers are the narrowest and smallest. The flowers are yellow. This species comes nearest to *H. macranthum* of Bentham, but differs from that plant in several respects. It may be what is called in gardens, *H. macranthum var. album*, but I have never seen that plant. *G. Don.*

The above specific character and description were sent to me by my kind friend Mr. George Don; and I have only to add that the plant was raised from Swan River seeds (imported last spring by Captain Mangles) by Mr. Hopgood, of the Craven Nursery, Bayswater, in whose garden it is now in flower. It is a very large and handsome half-hardy annual, and it promises to be a very desirable acquisition to our gardens. It is very much like *H. niveum*.

The plate in my last number (p. 225) was figured from some greenhouse plants in the nursery of Mr. Knight, King's Road, Chelsea. I was very much struck with their beauty and the brilliancy of their colours, and I was told that they had been all raised from Australian seeds, by Mr. Knight. In consequence of my absence from town, they were sent to Mr. Don, who wrote the following description of them; according to which, it appears that their names are different from those affixed to them at Mr. Knight's, and consequently from those in my plate.

DESCRIPTION OF THE PLANTS FIGURED IN PLATE 8, P. 225, ACCORDING TO THE NAMES AFFIXED TO THEM BY MR. GEORGE DON.

AOTUS, *Smith.* THE AOTUS.

Lin. Syst. Decandria Monogynia. *Nat. Ord.* Leguminosæ.

Generic Character.—Calyx without auricles. Pods stalked. Seeds dotted, rugose. Leaves rough above.

Description, &c.—This genus is very nearly allied to Pultenæa; but it differs in the calyx being without any ear-like appendages, whence the name, which is derived from two Greek words, signifying "no ears."

1.—AOTUS VILLOSA, *Smith.* THE HAIRY AOTUS.

Engravings.—Bot. Mag. t. 949, and our *fig.* 1, in Plate 8.

Specific Character.—Leaves linear, acute, hairy; flowers solitary, axillary, forming racemes at the top of the branches.

Description, &c.—This pretty little plant was raised at Mr. Knight's exotic nursery, from seeds received last year from Van Diemen's Land; but it appears from Mr. Don to have been first introduced in 1790. It is a greenhouse shrub, flowering nearly all the summer, and it should be grown in a mixture of sand and peat.

PLATYLOBIUM, *R. Br.* THE AUSTRALIAN FLAT PEA.

Lin. Syst. Diadelphia Decandria. *Nat. Ord.* Leguminosæ.

Generic Character.—Calyx bracteate, two-lipped; upper lip round, large, bifid. Stamens all united. Legume naked, compressed, winged at back, many-seeded.

Description, &c.—The pods of all the species belonging to this genus have showy flowers, and large, flat, broad pods. They are all natives of Australia.

1.—PLATYLOBIUM TRIANGULARE, *R. Br.* THE TRIANGULAR-LEAVED FLAT PEA.

Engravings.—Bot. Mag. t. 1508; and our *fig.* 2, in Plate 8.

Specific Character.—Branches flexuose, stiff; leaves deltoid, three-lobed, with shining angles. Peduncles shorter than the leaves.

Description, &c.—The plant figured in Plate 8 was called in Mr. Knight's nursery *Platylobium Murrayanum* (Hook. Bot. Mag. t. 3259); but Mr. Don thinks it only a slight variation from *P. triangulare*, which was introduced from Van Diemen's Land in 1805. It is a healthy greenhouse plant, easily kept, and requiring very little care, except in regular daily watering, and keeping it without a saucer. All the Australian plants require care in this respect, as they are all easily injured, either by suffering their slender roots to become too dry, or by rotting them by suffering them to remain in stagnant water.

PODOLOBIUM, *R. Br.* THE PODOLOBIUM.

Lin. Syst. Decandria Monogynia. *Nat. Ord.* Leguminosæ.

Generic Character.—Calyx 5-cleft, 2-lipped. Keel compressed, the length of the wings, which are equal to the expanded standard. Ovary many-seeded, in a single row. Style ascending. Stigma simple. Pod stalked, linear, oblong, moderately ventricose; smooth inside.

Description, &c.—The plants belonging to this genus are all natives of Australia, with very showy flowers; and which are remarkable for the long stalks they have to their pods. They are all of very easy culture, requiring only the same treatment as the Platylobiums.

1.—PODOLOBIUM TRILOBATUM, *R. Br.* THE THREE-LOBED LEAVED PODOLOBIUM.

Engravings.—Bot. Mag. t. 1477; and our *fig.* 3, in Plate 8.

Specific Character.—Leaves opposite, spiny-toothed, three-lobed, the lateral lobes the smallest. Ovarium silky.

Description, &c.—The species called *Podolobium trilobatum* is a native of New South Wales, whence it was introduced in 1791; but the plant figured in Plate 9 certainly differs from it considerably, both in the size of the flowers and their colour. It also appears much more hardy than the species. It was raised from Australian seeds received by Mr. Knight in 1840.

2.—PODOLOBIUM BERBERIFOLIUM. THE BARBERRY-LEAVED PODOLOBIUM.

Synonyme.—P. trilobatum, *var.* Bidwelliana.

Engraving.—Our *fig.* 4, in Plate 8.

Specific Character.—Leaves ovate, acuminated, deeply spiny-toothed, but with the upper ones somewhat three-lobed.

Description, &c.—A very handsome plant, requiring the same treatment as the preceding species; introduced in 1839.

All these plants are very ornamental; and as they continue in flower a long time, they are particularly valuable for windows, flower-stands, or balconies. When, however, they are used for either of the latter two purposes, they should be grown in double pots, with the interstice between the pots stuffed with moss, which should be kept constantly moist. This mode of growing Australian plants will indeed always be found most successful where the pots are either exposed to the action of the wind, or kept in warm, dry rooms. Double flower-pots are made and sold by the potters, but common flower-pots placed one within the other will answer just as well, and be cheaper. When the space is very much confined, china or glazed pots may be used, as they are not porous, and therefore do not dry the roots so much as the common earthenware flower-pots, which are very porous; but glazed pots, unless there are several holes for drainage, are apt to become repositories for stagnant water, and thus to rot the roots of the plants they contain.

THE EDITOR'S TOUR.

(*Continued from* p. 235.)

June 28th to July 26th.—*Crosslee Cottage.* During the month that we spent under the hospitable roof of our kind friends Mr. and Mrs. Woodhouse, I had abundant opportunities of remarking the very different habit of growth assumed by many well-known plants in England and Scotland. The garden at Crosslee Cottage lies high and dry, and the soil is light: the climate of the west of Scotland is generally considered a weeping one; but if I may judge by what we experienced, its tears are rapidly succeeded by smiles—or, to speak without metaphor, the showers were generally succeeded by gleams of excessively hot sunshine. This soil, situation, and climate, appear to be wonderfully well adapted to the culture of the Californian annuals, which attain here a size and brilliancy of colour which they never possess in England. *Nemophila insignis* was

particularly beautiful; and *Platystemon californicum* and *Limnanthus Douglassi* formed quite large handsome flowers. *Malope grandiflora*, on the contrary, was poor and dwarf, neither the flower nor the stem being much larger than those of *Nemophila insignis*; *Œnothera Drummondi* was also small and pale; and *Collinsia bicolor* smaller than *C. grandiflora*. *Alstrœmeria aurantiaca* was growing freely and flowering abundantly in the open air, with *Francoa appendiculata*, and all the most beautiful of the *Pentstemons*. Of the latter, *P. Murrayanum* and *P. gentianoides* were perfectly splendid. I was very much astonished, and I might almost say mortified, to find the annuals so very different from what I had described them in my coloured work on the subject; and it will be a lesson to me henceforward, always to mention the soil and climate under which I have found plants thrive, and the reverse, when I describe them.

Glasgow, July 26.—The city of Glasgow itself offers little to interest the traveller. The botanic garden is in a transition state, being half transferred from a dull, smoky, town-like situation, to a most romantic spot on the banks of the lovely river Kelvin. Of the garden itself I can say little; it probably will be handsome, but at present nothing can look more miserable. The half-built hothouses and lodges, the broken-up roads, the newly-planted trees, which looked cold and shivering in the piercing blasts to which their elevated situation is exposed, presented a picture which even my fertile imagination could not clothe with beauty; and it was not till I saw the old trees remaining on the sloping bank of the river, that I could fancy it would become beautiful in time. I was, however, very glad to be introduced by Mr. Stewart Murray, the curator of the garden, to Dr. Gardener, a young man who has visited the Organ mountains of Brazil, and made a most valuable collection, not only of plants, but of other objects of natural history. Some of my readers may perhaps be amused to hear (as I was myself) that these celebrated mountains receive their name from their strong resemblance to the pipes of an organ. They are exceedingly rich in plants, particularly in Orchidaceæ, and till the last few years were very little known.

The Necropolis at Glasgow is the handsomest cemetery I have ever seen; and it is the most easily visited, as we drove up to the very top by an inclined-plane-like road, which did not seem to distress the horses at all. The situation is very striking, as the ground on which the cemetery is placed adjoins the old cathedral so closely, that the statue of John Knox, which forms the highest point of the Necropolis, appears to frown at the "idolatrous building" below, as though he still menaced it with destruction. Several of the graves were decorated with little flower-gardens; but I did not think they looked so well as those which had

massive stone monuments—the latter harmonizing much better with the scene around. The cathedral is in a shocking state of dilapidation; and its appearance was strongly contrasted with that of the cemetery, every stone of which is erect, based in the solid rock, and looking as though it could defy the waste of centuries. These memorials of the old times and the new, looked like youth and age—the one waning fast to decay, and the other in all the vigour and strength of beginning life. There was another cemetery at Sight-hill; but it was quite in its infancy, and looked so cold and comfortless, that I almost pitied the dead who were to lie in it. The situation is on the side of a hill, commanding a fine view of the city; and the most picturesque part of the whole is an English chapel, erected at the entrance, for the benefit of those who wish to have the service performed for the dead.

Garscube, the seat of Sir Archibald Campbell, was the only private residence we visited in the neighbourhood of Glasgow. It is a handsome mansion, most beautifully situated on the banks of the river Kelvin, with steep banks covered with wood sloping down to the water: these beautiful glens are common in Scotland, and, to me, constitute one of the greatest charms of Scottish scenery. The rich, deep green of the trees covering these steep banks, contrasted with the bright clear water of the stream below, leaping over the irregularities of its rocky bed, and sparkling in the sun, forms one of the most lovely pictures that can be conceived. The only fault I could find with this romantic place was one which, I have since observed, is common to all the Scotch villas we have seen—it is, that after going through a beautifully wooded part of the approach, we came to an open part like a common field, sometimes fenced off the road with palings, and sometimes with hedges, and in many cases sowed with grain. I cannot describe how completely the farm-like appearance of this strip of land destroys the ideas of privacy and seclusion which English taste always likes to associate with a nobleman's or gentleman's residence; it appeared to me like a shop or a manufactory opening into an elegant drawing-room. It is most likely, however, that I am wrong in this feeling, as it must be approved of by many persons of taste and judgment, from its very general adoption. I was delighted to find that Lady Campbell was fond of gardening herself.

July 27th.—*Glasgow to Hamilton, by Uddingstone and Bothwell Castle.* —The first place we stopped at after we left Glasgow was the pretty village of Uddingstone, where we called at Know-top, the residence of Mrs. Wilkie, also a lady gardener, whose beautiful flower-garden showed ample proof of the care and attention bestowed upon it. I was here delighted to find the *Malope grandiflora* with flowers as large as I had seen on the same

plants in London, Mrs. Wilkie having taken the precaution of sowing her seed in a moist and sheltered situation. I was very much struck with this; as, reasoning from analogy, the Malope, which is a native of the arid sands of Barbary, *ought* to have succeeded best in a light dry soil. However, no reasoning can be put into competition with experience; and I can only tell my readers what I saw, leaving them to draw their own conclusions from it. The *Clarkia pulchella*, and all the kinds of Candy-tuft, were splendid in Mrs. Wilkie's garden; and *Sambucus racemosa*, the red-berried elder, was growing with the greatest luxuriance in her shrubbery.

Bothwell Castle is one of those places which are visited for the historical recollections they excite, independently of any intrinsic merit they may possess. Bothwell Castle is, however, highly interesting to the gardener as well as to the antiquary. The keeping of the garden is perfect; nothing can be more neat and clean than the flower-beds, &c.; and this is a rare merit in Scotland, where the extent of the pleasure-ground is, in general, much too great for the number of men employed to keep it in order. Mr. Turnbull, the gardener, is celebrated for his heaths and his calceolarias, the former being particularly splendid; some of his seedlings surpassed, indeed, anything I have yet seen, in the beauty of their flowers, though I did not think the appearance of the individual plants equal to that of the plants at Mrs. Lawrence's, with which I was so much delighted previously to my leaving London (see p. 222). After walking through the gardens, and observing that the fruit was not so abundant as in some places in England, from the bad habit of cropping the borders, we entered the pleasure-grounds, and proceeded to the ruins of the ancient castle. Nothing can be finer than these ruins and the situation in which they are placed, commanding the river, on the opposite shore of which stand the remains of the ancient priory of Blantyre. Placed on two steep banks, based on the solid rock, and half hidden by noble trees, these two monuments of the pride and power of the priests and nobles of other days stand facing each other, with the lovely and tranquil Clyde flowing between,—the river and the rocks, in all their native beauty, perfect and unchanged, but the works of man, notwithstanding all the cost and labour bestowed on their construction, fast crumbling into dust. The ivy, the aristolochia, and many other climbing plants, twined gracefully round the ruined towers; and the whole formed a scene of great beauty, independently of the interest attached to it from its historical associations. The modern house called Bothwell Castle is merely a modern house, looking like a piece taken out of a street and dropped accidentally and quite inappropriately in the midst of a fine

old park. I have only to add that the park contains a great number of stately trees, some of which are of extraordinary beauty, as well as size.

July 28th.—*Hamilton.*—We stopped at a most excellent inn in the principal street of the very handsome little town of Hamilton; and the following morning we first went to visit a very curious garden at Barncleugh. This garden is cut in terraces on the side of a steep rock, bordering the river Aven, celebrated by Burns in the following beautiful verses:—

Ye lofty banks that Aven bound,
Ye lavish woods that wave around,
And o'er the stream your shadows throw,
Which sweetly winds so far below;
What secret charm to memory brings
All that on Aven's border springs?
Sweet banks! ye bloom by Mary's side,
Blest stream! she sees thee haste to Clyde.

I could not help being powerfully struck with the justice of the poet's description: the lofty banks are still crowned with lavish woods, which throw their shadow over the stream "which sweetly winds so far below;" and which still seems hastening on to Clyde. The garden at Barncleugh has a ruined and desolate appearance; the steps leading from one terrace to another are broken, the fountains have long been dry, and the summer-houses are hastening to decay; but the clipped trees still remain as when first formed, and a few flowers, the pride of the old gardener, ornament the beds, like wreaths hung over a broken tomb. This little property, only thirty-six acres in extent, lies in the centre of the Duke of Hamilton's widely-extended domain; and the proprietor, or the proprietress, for I believe the owner is a lady, has hitherto resisted all the efforts which the Duke's agents have made to purchase the freehold. So there it remains in all its independence, going to ruin according to its own fashion, and affording in its decay a striking contrast to the admirably kept plantations and lands around it, which the immense wealth of the duke, and the science and skill of his numerous agents and factors, have advanced to the highest pitch of modern improvement.

Cadyow Castle is a very interesting ruin, belonging to the Duke of Hamilton, with its legend attached, (for what Scottish castle is without one?) of the unfortunate Mary having once lodged within its walls. The adjoining forest is remarkable for its immense oaks, which are some of the oldest and largest in Scotland, and its breed of wild cattle. These beautiful creatures are white, with black ears and muzzles. We came upon a herd of them lying asleep under the trees; and I shall never forget the low, half-suppressed lowing from the younger cattle, deepening by

degrees, as the older ones arose and joined in chorus, forming a phalanx in front of us, with the others behind them. We did not wait the issue of these warlike preparations, but retreated as fast as our horses could carry us; while our guide assured us that if we had been on foot, we should not have escaped so easily. I may here mention that the road through the forest was so rough, and the ascents in some places so difficult, that I trembled for our equipage; and I am sure no London-built carriage with English horses could have passed through it. Luckily we had hired a light phaeton with a pair of beautiful little grey horses, and a very intelligent driver, from the Eagle Inn in Glasgow; and with their assistance we penetrated through almost impassable roads, and found the most intricate places without the loss of either time or temper. I never travelled more agreeably or with fewer delays: the man, the carriage, and the horses were always ready and in perfect order whenever they were wanted; and they always found their way as expeditiously as possible to the place desired. The only drawback was the rain, which occasionally descended in torrents; but perhaps even this only gave a greater zest to the gleams of sunshine that followed.

On our return to the inn, we found that the duke had very kindly returned a favourable answer to Mr. Loudon's request to see the palace; an indulgence which we were very grateful for, as it is at present shut to strangers, on account of the alterations which are now making. The exterior of the palace is noble and commanding, but it wants an architectural flower-garden round it. The interior is remarkable for its jewelled furniture, the value of which is immense. Amongst other things, there is a time-piece with a circular pendulum, set with large diamonds, which would have made a splendid necklace, and a chandelier of rock crystal. The most interesting pieces of furniture for me, however, were the chairs and table from the boudoir of Mary Queen of Scots, and the bed and drawing-room furniture of Marie Antoinette, from Versailles. The chairs of Queen Mary were light and elegant, though still in the fashion of her day, and beautifully inlaid with ivory. The table was ebony, also inlaid with ivory. After going through the palace we visited the garden, which was "quaint and trim," consisting of formal flower-beds on grass, with clipped trees between. The kitchen-garden was laid out in the usual Scotch fashion, with the borders next the walks full of flowers. Nothing could be more striking than the contrast between the noble palace, with its park of 1700 acres, full of fine old trees, and the miserable appearance of the kitchen-garden, which was scarcely large enough for a small villa. The gardener we did not see.

Chatelherault is a kind of summer-house in the park at Hamilton.

about a mile from the palace. It is built so as to form an apparent model of a chateau belonging to the Duke in France; but instead of forming a square, only one side is finished, behind which is a garden laid out in very good taste in green terraces, and as a geometrical flower-garden. The whole is beautifully kept under the superintendence of the gardener, Mr. Picken. Here, examining the flowers, I was pleased to find the Californian annuals as beautiful as in other places in Scotland; and among them was a double Clarkia. I was quite delighted with the manner in which this garden was kept, and the admirable manner in which its French style harmonized with the general character of the building; and I really quite envied the gardener for the privilege he possessed of living in so delightful a place.

July 29th.—*Hamilton to Lanark, by Allanton and Milton Lockhart.*—We left Hamilton with regret, for we had greatly enjoyed our stay there, and we proceeded to Allanton, a place rendered celebrated by its late proprietor, Sir Henry Stuart, as having been the scene of his experiments for transplanting large trees. These trees Mr. Loudon was anxious to see, and they certainly were looking wonderfully well, and I think few strangers would have supposed it possible that they had been removed. Another point was the very skilful manner in which a difference of level in two pieces of water was concealed. Though not exactly connected with gardening, I cannot conclude my account of Allanton without mentioning the extraordinary qualities of a dog in the possession of Lady Seaton Stuart, the daughter of Sir Henry. I have seen many very accomplished dogs, both on the Continent and in England, but I think I never saw one who seemed so completely to understand everything said to him as Lady Seaton's Fox. In addition to waltzing, shaking a paw, jumping over a stick, &c. &c., I was amused, when he was told to shut the door, to see him wait with a look of great sagacity, and an air of listening attentively, to hear if the latch clinked, and when he found it did not, to see him give the door another push, walking away with an air of great satisfaction when he found he had performed his duty perfectly.

Milton Lockhart is a newly-built house, on the banks of the Clyde, built on the site of the residence of the celebrated Clover-house, so often mentioned in "Old Mortality," and whose memory is so detested by the country people, that they believe misfortunes will befal every dweller in his residence. It is to be hoped that the handsome new house now erected will help to break the charm in their eyes; and indeed I was astonished to find any relics of so ridiculous a superstition existing in these enlightened days. The present proprietor of Milton Lockhart is the brother of the celebrated Mr. Lockhart, of the Quarterly Review. The

house is beautifully situated on a kind of peninsula, formed by a turn of the Clyde; and the garden is laid out in grassy terraces and flower-beds, very nicely kept. I was very much pleased with the double sweet-williams, which looked like little roses. The gardener here has raised a great number of seedlings, and he has obtained twelve varieties, so perfectly distinct and so very beautiful, that I was quite delighted with them. I had no idea that sweet-williams could be so beautiful, and I mention them here to turn the attention of my readers to the subject, as I find the seed ripens freely, and the plants vary so much that no two in a large bed are alike. A pale pink with very double flowers took my fancy so much that I brought a specimen away to figure, but unfortunately it withered before anything could be done with it.

In the house, which is admirably contrived and very convenient, we saw a descendant of the celebrated pepper-and-mustard terriers, named Spice, who, so far from partaking of the fiery spirit of his ancestors, suffered my little Agnes to take him in her arms without making the slightest resistance. We had intended visiting the Stonebyre Falls after leaving Milton Lockhart, but a most tremendous storm, during which the rain descended in torrents, made us glad to hasten on to Lanark.

July 30th to August 1st.—*Corehouse.*—As soon as we had breakfasted, we proceeded to Cortland Crags, but the ground was too slippery from the recent rains to allow us to descend to Wallace's Cave. Indeed, it would require a stronger head than mine to pass at any time through such narrow paths, with stupendous rocks above and below, and a foaming river in the abyss beneath, seeming to yawn as though eager to engulf the victims which one false step would precipitate into it. From the Cortland Crags we proceeded to Lee, the residence of another family of the name of Lockhart. Here we saw some magnificent trees, and among others an oak, part of the original forest, 46ft. in circumference just below the branches; an enormous beech; some larches, planted at the same time as those of Dunkeld, one of which was 12ft. in circumference at 4ft. from the ground, and 100ft. high; and some remarkably fine spruce and silver firs. After having examined thesemagnificent trees, we proceeded to the house, where we saw the celebrated Lee penny, brought by an ancestor of Sir Norman from the Holy Land, where he had gone with Douglas to convey the heart of Robert Bruce, and which has been immortalized by Sir Walter Scott in his tale of "The Talisman." It is a curious stone, looking like a dark red agate, clumsily set in silver and fixed on a shilling of Edward III. It is said to have been considered as a talisman, and to have been obtained as part of the ransom of a Saracen prince taken in battle. After a very fatiguing walk through the gardens and pleasure-

grounds, in consequence of the loose stony gravel which so often disfigures garden-walks in Scotland, and through which it is necessary absolutely to plough one's way, we left Lee and proceeded to the Stonebyre Falls, which were very beautiful, but not so grand as I expected. Their effect was indeed much diminished by the guide, who took us to the worst view first, and then brought us lower and lower, till at last a good view was obtained. This injudicious arrangement destroyed the effect of the Fall, which if seen from the best point at first would have left a strong impression on the mind. The incessant gabbling of the woman, also, about a new petticoat given to her every year by Lady Mary Erskine of Bonnington, was enough to deaden every spark of romantic feeling which the scene was calculated to excite. From Stonebyre we proceeded to Corehouse, in my opinion the most perfect place we have visited. As to its natural beauties, I need only say that its grounds include the most celebrated of the falls of the Clyde—viz. Corra Linn and Bonnington, and art has done all that taste, aided by wealth, could dictate to assist nature. Commodious paths have been made and seats placed in all the best situations for seeing the falls; but this has been done so skilfully as never to interfere with the effect produced on the feelings by the magnificence of nature. Delighted, however, as I was with the falls of the Clyde, I was still more so with those of a small river called Corra Burn, which runs through a deep glen in a secluded part of the grounds, and which leaps from rock to rock, gleaming through the deep shadows of the overhanging trees like a stream of liquid silver.

The house is a modern one, replete with every convenience, but the ruins of the old castle and the mill still remain on the banks of the Clyde. The gardens are extensive, and those devoted to flowers and the greenhouses are very elegantly arranged. In the Conservatory was a most splendid specimen of *Rhodochiton volubile*, trained so as to hang in festoons from the roofs, and producing a most striking effect.

(*To be continued.*)

ON THE CULTURE OF THE MIGNONETTE.

BY MR. MEARNS, CURATOR OF THE LEEDS ZOOL. AND BOT. GARDENS.

I AM now (July 17th) in the act of picking out all the blossom-top of my mignonette, a practice which I have followed for several years. You are well aware how blossoms exhaust the vigour of any plant until it gets well established; and in our poor hungry soil here, I find the necessity of picking off all blossoms and blossom-buds, and stopping in all lateral

shoots until the plants become bushy and vigorous. Most annuals are best when the central shoots are picked out, and the early blossom-buds displaced until they have become sufficiently well established; and when treated in this manner even one solitary plant has been formed into a fine vigorous bush. Such as the following I repeatedly go over, and take off the whole blossoms, with their footstalks, and as frequently pinch off the extremities of the shoots, so as to form them into compact healthy bushes, before I suffer them to produce blossoms freely, viz.:—*Erysimum Perfoskianum*, *Sphenogyne speciosa*, *Leptosiphon androsaceus*, *Bartonia aurea*, *Calliopsis picta*, *Eutoca viscida*, *Eschscholtzia californica*, &c.: likewise all my ten-week and little annual stocks, China and German asters, African and French marigolds, and mignonette; the latter being an important plant in every garden, but one usually badly managed. I have acquainted you that I was in the act of picking off all the blossoms from my mignonette upon the receipt of your letter, and I had been enjoying that task from early dawn, as the morning was, what it had not been for some time, delightful for the purpose; and on such mornings I cannot rest in bed when I have such pleasing and important occupations in hand.

Mignonette is of the most simple and easy culture, which every lover of flowers knows; but you never see it so managed as to look long neat and elegant; while although it is but a simple flower, it is really kept elegant for a length of time when treated in my manner.

I shall begin with my box or window-culture first: I get some good compost, such as is usually prepared for vines; or a mixture of good cucumber and melon mould, or rich garden soil, is quite sufficient for the purpose. Instead of sowing the seed, I transplant the compost in the boxes, either from the clumps or border, or from plants previously raised for that purpose, planting only one row along the middle of the box, at four to six inches apart, and pinching off the tops of each plant as soon as I plant them, or very soon after. If I plant large plants, which I frequently do very successfully, I pinch all the shoots back to the first joint of each; and as they push fresh shoots, I continue to pinch them all back to the first joint of each shoot, till the box becomes nearly full, or till I think I shall soon require them to be in bloom, when I decline stopping them any longer, and allow them to shoot out for flowering. Still I occasionally pinch them in so as to keep them in a judicious trim; and frequently I thin out many branches, that they may not become too crowded, so as to weaken the plants or endanger the stems by damping off. By the above treatment, I have had mignonette that has been planted and treated so early in the spring, kept in fine and vigorous bloom at Lord Bateman's, and at the Duke of Portland's, in the outside of the windows, till the end of January.

There had been little or no mignonette sown in the gardens here till this season; I sowed a good deal round the beds and borders, but owing to our cold, wet, clay soil, and the unfavourable season, in many parts it either never came up, or so weak that it dwindled off afterwards; but on some parts of the higher and dryer grounds it came up tolerably well, which has given me plenty to transplant at this more favourable season into the less congenial soils, where it had gone off; and by my box treatment it is now promising to do well. Until it gets proper vigour, I keep picking out the blossom-buds as soon as I can detect them, or pinch back the shoots to make them strong and stocky plants. Those I leave after thinning I treat just in the same manner as the transplanted ones; so that one single plant only left, becomes a much finer specimen than by leaving more. The usual slovenly manner of leaving it to ramble where it chooses, and all the plants which spring up from the seed, is always disagreeable to the sight; and it soon exhausts itself by rambling seeds and blossom.

Some plants are trained to a single stem, and tied to a stake; and these may be either trained to form into a bushy head at any convenient height, or spurred into the first joint, so as to have them in blossom the whole height of the stem, as far as it may be desired.

LEEDS,
July 17th, 1841.

ON THE VERBENA TEUCROIDES, &c.

BY J. M.

MADAM,—It may be deemed sadly uncourteous to intrude upon you in this grumbling fashion, but really I cannot help it, as I think you have been most unwarrantably severe in your condemnation of the *Verbena Teucroides;* uniformly denouncing it as of a coarse and weedy habit, falling short of the expectations formed of it. Now, the whole tribe of *Verbenas* are with me especial favourites, the objects, I assure you, of my peculiar care; and charming as many of them are, there are few, if any, that I prefer to the *Teucroides:* it does not, I confess, possess the brilliancy of colour or compactness of habit that happily renders some of its congeners so resistless; but the want of these is far more than compensated by its exquisite perfume—a real quality, far outweighing any or all of its supposed defects, and capable of securing it an undying popularity, and a corner in the affections of the cultivator, when those possessing far more gaudy exteriors have blazed their day and are forgotten.

That such is a more lasting, more esteemed quality, is amply confirmed by the history of many of our unpretending favourites, that have, upon the wreck of thousands that would scorn comparison, become familiar as household gods. There is nothing attractive in the habits or gaudy in the flowers of the Heliotrope, or in the lemon-scented Verbena, *Aloysia citriodora*, yet they are indispensable. Mignonette is less elegant and more weed-like than even most weeds, but it is a "*little Darling*" still. The flower in question is as powerfully as delightfully fragrant as any of these, and equally worthy of cultivation. A stunted, starved specimen in a pot may have disgusted you with its appearance, and in some measure deserved the character you have given it; but properly cultivated, it is altogether inapplicable, as it has really good, fine dark green foliage, and an endless profusion of bloom. I have seen it in admirable condition planted in a border in a greenhouse, and trained to a net stretched across the whole house, where it will soon form a complete cover. So placed, it is intermixed with the *Verbena Neilli*, also delightfully fragrant; and thus combined, both as regards appearance and perfume, they draw exclamations of delight from all who witness them. They are also of so robust a habit, that they succeed well either in beds pegged down, or as covers to walks or trellis-work in the open ground.

KENT,
July 19*th*, 1841.

[I confess myself wrong in having censured the *Verbena Teucroides* so severely without knowing more of it; but I only spoke from the specimens I had seen in the neighbourhood of London. Since I have been in Scotland, I have seen beds of it beautifully in flower, and growing with great luxuriance.]

ON THE FORMATION OF A MIXED FLOWER-GARDEN.

BY MRS. GORDON.

MADAM,—Though I have read with interest your remarks on the formation of flower-gardens generally, I trust you will forgive me for saying that I think you have hardly done justice to a kind of garden common in the country in which I believe you are now staying, and of which I am a native. You will easily understand that I mean Scotland, and that the garden I allude to is where the flowers are mixed together, and not planted in masses of one colour, as in the gardens you have hitherto described. I confess I prefer a mixed flower-garden to one planted in masses; partly, no doubt, from my eyes being only accustomed to the

former kind, but partly also, I think, from the pleasure I experience in seeing the forms and colours of the flowers skilfully contrasted with each other. In the mixed flower-garden, also, I think we see the forms of the flowers more distinctly, and are better able to enjoy their individual beauties, if I may so speak, than when a great quantity of the same kind are thrown together in a mass.

As I have had some experience in the cultivation of flowers, and (as you recommend) I am in the habit of gardening with my own hands, I trust you will not think me presuming if I say a few words on the manner in which I manage my flower-garden. I have my borders slightly raised, sloping to the walk; and I plant the back with tall-growing perennials, such as *Lysimachia verticillata*, French willow-herb, &c., mixing their colours according to my own fancy. In front of these I sow my annual flowers, and near the box-edging I plant my spring bulbs. I sow my annuals in March, taking care to place each in the soil and situation which I have found from experience suits it best; and I tie up both the annuals and perennials when they are spreading out of bounds, by fixing stakes painted green, or pieces of hazel-twig with the bark on, round each plant, and twisting twine round the sticks so as to form a circle round the stems and leaves—thus keeping each plant in its proper place without the stiff appearance so often produced by tying.

ON THE CULTURE OF ROSES.

BY THE EDITOR.

I HAVE been so frequently asked to give some ideas on the culture of roses, that I have been induced to write a few pages on the subject; and in these I shall endeavour to lay before my readers a brief account of the directions given by the best modern florists on the management of the different kinds of roses. I say, of the different kinds, because, as one who has attempted to grow roses must be aware, the different kinds require quite different treatment with regard to pruning, though all the kinds agree in thriving most in a rich soil, with their roots mulched,—that is, with half-rotten manure laid on the surface, round the stem of each plant, in spring. If thus treated, and kept frequently watered in dry weather, while they are in a growing state, and properly pruned according to their kinds, all sorts of roses will grow luxuriantly, and produce fine healthy flowers; which they never will do if the roots are driven down to the sub-soil by the dryness of the surface or any other cause. Roses are like

fruit-trees; they will never give satisfaction to their cultivator unless their fibrous roots are induced to keep near the surface, so as to be within reach of the atmospheric air. Thus the rose in mixed borders seldom flowers so well as in rose-gardens or roseries, because in the mixed borders the earth is so frequently disturbed by taking up and replanting perennials, sowing the seeds of annuals, &c., as to prevent the roots of the rose-trees from keeping near to the surface, which they always do in rose-gardens where the soil is seldom touched. Vegetable physiologists account for this by stating that the roots imbibe a degree of carbon from the atmospheric air, which renders the sap thick and rich, and fit for the production of fruit and flowers; while those trees which are compelled to send their roots down to the sub-soil in search of food, have a thin and watery sap, fit only for the production of shoots and leaves.

All the kinds of roses grown in gardens are either bushes, standards, or climbers. The bush-roses are either raised from seed, and grown, as gardeners term it, on their own bottom, or grafted just above the root on the common dog-rose, which is found wild in the hedges; the standards are roses grafted on tall, straight briars of the dog-rose; and the climbers are such roses as have naturally stems too weak to grow without support. It is obvious that all the bush-roses may be turned into standards by merely grafting them on briars standard high; but it has been observed that the moss-roses seldom do well as standards if grafted on briars more than two or three feet high. Many bush-roses may also be turned into climbers by training, and tying them to supports.

Roses may also be divided into the hardy kinds, which flower from June till August; and the half-hardy kinds, which may be made to flower nearly all the year.

The commonest of the hardy roses is the cabbage or Provence (*Rosa centifolia*). There are about a hundred and fifty varieties of this rose, all of which are distinguished by the numerous petals of their large cup-shaped flowers, which are generally somewhat drooping. The best flowers of this division are the Dutch, Grande Agathe, and Wellington. All these roses when grafted may be grown on a strong loam; but when grown on their own bottom, the soil should be lighter—that is, have some sand in it; and they should all be pruned in October if wanted to flower early, or in April or May in ordinary cases, the shoots being shortened so as to leave only three or four buds on each.

The moss-rose (*Rosa muscosa*) is only a variety of *Rosa centifolia*, and instances have been known of the same plant (without grafting) producing moss-roses on one branch, and the common cabbage-rose on another. There are fifty or sixty moss-roses, but the best are the common, the Clifton

white, which is hardier than the common white—the crested, which is very curious—and the Rouge du Luxembourg, the specimen of which in the Derby Arboretum (obtained from Rivers of Sawbridgeworth) was the finest rose I ever saw, and very superior to others which I have since seen bearing the same name. The moss-roses may be treated like the cabbage—that is, pruned in October or the beginning of May, by shortening their shoots to three or four buds; but they will flower better if a mulching of half-rotten manure be laid on the surface of the ground in which they grow, in November.

The French rose (*Rosa gallica*), also called the Provins rose, is a large flat rose, with an erect stem. There are about two hundred varieties; the best of which are Fanny Parisot, Belle de Fontenay, and Madame Dubarry. Many striped roses belong to this division, the best of which are the old York and Lancaster; Aglae Adanson, and the Village Maid, or *Provins panaché*. The Abbé Berlèse is a fine rose when it first opens, but it soon fades in the sun. All these roses are very hardy, and will flower well without any care. They may, however, be pruned in October or May, shortening the strong shoots to six or eight buds, and the weak ones to two or three buds. They do best grown on their own bottom, and when grafted as standards, the clusters of flower-buds should be thinned, or the head will be too heavy, and the tall standard which supports it will be liable to break. In exposed situations this is frequently the case; and indeed in all places exposed to high winds, standard roses are best backed by evergreens, or some kind of plantation to afford them shelter. The French roses will do very well without manure, but the flowers will be finer if mulched like the others.

(*To be continued.*)

ESSAYS ON ORNITHOLOGY.

BY MR. MAIN.

THE RAVEN TRIBE.

The next genus is the beautiful family of woodpeckers, viz.—

The GREEN, OR LAUGHING WOODPECKER (*Picus viridis*). General colour, green-gold; crown, crimson; two fore and two hind claws; length thirteen inches. This handsome bird, as well as its congeners, feeds entirely on wood-eating or wood-inhabiting insects; and for capturing and extracting larvæ from their smallest perforations, the tongues

of the birds are wonderfully well adapted. That of our present species, though contractible to little more than an inch in length, the bird can elongate at pleasure to six inches. The extreme point of the tongue is like a slender bowl of a spoon, with barbs on the edges, raking backward from the point; so that any soft body, like that of the wood maggot, is sure to be drawn out into the bill of the bird. Notwithstanding the whole lives of these birds are employed in the destruction of wood-eating insects,—consequently being of incalculable service to the timber owner and planter,—they are a proscribed race. They are untruly charged with making œilet-holes in trees to admit moisture, and cause rottenness. Now the fact is, the woodpeckers never wound a sound tree: if insects have begun depredations, the birds will dig or draw the worms out; and if a tree be hollow, they will cut a passage from the outside to the interior cavity to nestle in. But in doing this, they do no damage, neither increasing the old defect nor causing new. The laugh, or call of the green woodpecker, is one of those rural sounds which intimate the approach of summer, and is frequently repeated during the breeding season. After pairing, they set about preparing a breeding-place. This, as already observed, is always in trees which are hollow within. And though this hollowness may not be perceivable, nor even suspected by the forester, the birds discover it by some means or other, and immediately begin chiselling out an exactly round passage, just large enough to admit them into the decayed part of the tree within. As this rottenness of the timber is caused by a dead branch rotting back into the interior, the entrance made by the bird is always some distance below the original wound. When they have formed a chamber large enough for their purpose, the eggs are laid, and the young, when full feathered, issue from the hole and creep about it, clinging to the bark in an erect position, to be fed by the old ones for some days, before they take wing and go in quest of food with them. While in this stage of their life, they often fall a prey to the sparrow-hawk; and even the old ones have difficulty in escaping, if the hawk be very hard pressed for food.

The greater-spotted Woodpecker, or Jar-bird (*P. major*). A species not quite so common as the green one, but a beautifully-marked bird. Their economy in feeding, breeding, &c., is much like the preceding, but they are not so ready in cutting out new entrances for themselves, if they can find a last year's one deserted by the green species. They are called jar-birds by the woodmen, from the power they have of making a peculiar jarring noise when searching for food. This they do on the dead branches or tops of trees, and which are much worm-eaten. Many insects lodge in these holes; and to rouse them, the bird places

himself on the side of the branch, and by a quick and vigorous application of his strong beak upon the naked wood, produces a jarring sound, which may be heard at the distance of a mile. The insects being thus alarmed, issue out only to be more quickly devoured.

P. medius. This species is marked a good deal like the foregoing, only it is considerably less, not so noisy, and instead of boring into hollow trees, contents itself with any accidental opening it may find. They also live more on the tops of trees than the other species, and are seldom seen on the ground.

The small Woodpecker (*P. minor*). This is the smallest British woodpecker, and is much more rare than the others; it lives constantly on trees and on wood-worms, and has much the manners and markings of the two last.

The woodpeckers have all a peculiar style of flight; proceeding in long bounds or curves, and never alighting upon the horizontal branches of trees, but invariably on the trunk, on the bark of which their scansorial powers enable them to travel upwards or downwards, or round the butt, with the greatest alacrity. To assist their perpendicular position in climbing, their tail-feathers are remarkable strong and rigid; and these are always used as props by the bird when at rest on the side of a tree. None are so audible as the green one; all the rest have only a chucking note, which they repeat in flight at every jerk of their wings. Their cries or screams when attacked by a hawk are, however, very loud and dolorous.

The next genus of the Picæ class is the following.

The Nuthatch (*Scilla Europœa*). A beautiful little active bird called the Nuthatch, from its fondness for hazel-nuts. The upper part of its foliage is bluish-grey, and beneath dull orange. They are very common in woods in the southern counties of England, and are wholly tree birds, nestling in the old holes made by woodpeckers or any other opening which will admit them.

It may be noticed in this place, that holes made by the woodpeckers, or by a dead fallen branch, become less and less every year, in consequence of the new growth of the tree contracting the orifice. These contracted holes are appropriated by the nuthatch, and by the smaller species of woodpeckers, by the wryneck, and by several of the titmice (already noticed, p. 51 *et seq.*); so that the green woodpecker, or Ail, as it is provincially called, is in fact, the pioneer for all other birds which breed in hollow trees. We have known several instances of swarms of bees taking to those holes (which by the bye, is a proof of what has been only suspected, that there are some *leaders* of the swarm who have previously

chosen a new residence before leaving the hive) and living in them for several years, till at last completely obstructed in their ingress and egress by the growth of the tree. And we have often stood witnessing the anxious bustle of the poor bees when the aperture was so contracted as to admit only one to pass at a time; and finally, when at length closed, seen them clustering round the closed entrance, till killed by the night air.

Although the nuthatch cannot be called a song bird, he has many cheerful calls, which are uttered pretty early in spring, and always, from their lively distinctness, have a joyous effect on the ear of the woodland traveller. Throughout the nut season he fares sumptuously; and when the nuts have fallen and lie buried among leaves, he industriously searches for them during winter. The nuthatch, when nuts are over, feeds on the kernels of cherries, plums, and at last on those of haws. His dexterity in cracking the shell of a nut is very amusing. The bird always chooses a crack or chink in the bark of a tree, which he uses as a vice; in this the nut is firmly placed, and then the bird standing above, head downwards, hammers the nut with his strong pointed beak till the shell is split and the kernel exposed, which is quickly eaten, and another sought to be broken in the same place. These birds, indeed, if locally situated, have a favourite vice or crevice, to which all their nuts are brought to be broken; and under this workshop we may often find a peck of shells, out of which the kernels have been extracted.

The Tree Creeper (*Certhia familiaris*). This is a small brown bird, streaked with black, and very closely allied in economy with the woodpecker. It lives on insects, which hide themselves under the exfoliations of the bark; and while in search of them its action up the trunk of a tree is much like that of a mouse. Like all the other species of very small birds, they are not scared by the presence of man; and therefore this want of fear is made a nominal distinction. They nestle and lodge in holes of trees, and in the breeding season give now and then a short, squeaking strain of song, but which proves a very inferior part in the music of the groves.

The Hoopoe (*Upupa Epops*) is a very beautiful bird, which visits us for a short time during summer, but in very small numbers. Their shyness in coming among us is not to be wondered at; for no sooner is a hoopoe seen or heard than every savage gunner is in pursuit, for the sake of having the dead bird stuffed for an ornament on his mantel-piece. The plumage is beautifully varied; the crest, two inches long, is orange tipped with black; neck tinged with red; under side of the body white, above barred with black and white, and tail the same, and the bill and legs black.

The Kingfisher (*Alcedo hispida*) is another beautiful British bird: crown and coverts of the wings dark green, spotted with blue; shoulders and coverts of the tail bright azure; beneath orange; tail deep blue. Although the plumage is splendid, the shape is by no means elegant: it is short and lumpy; the wings are also short, but powerful in action. Their flight has been compared to a meteor, so rapidly do they skim along the water or ground. They live entirely on small minnows, and the fry of all other fresh-water fish. Their method of fishing is by perching on a low branch of a tree overhanging the stream, and looking steadfastly down, they drop suddenly upon their prey, which they seize across the back, and though several inches beneath the water, with such certainty as rarely to miss. There is a physical necessity for the bird sitting directly over his prey; for a lateral view would deceive him as to the real place of the fish, owing to the refraction. The Kingfisher makes a nest in a hole under the overhanging bank of a pond or river, especially if secluded, and overshaded with trees. The banks of a deeply-worn channel of a rivulet, running through a wood, are their favourite haunts; and here also they most readily find their food in the shallows of the stream. The Miller's Thumb (*Cottus gobia*) is a favourite morsel with this bird; and when they have young, it is astonishing the numbers of small fish they devour in a day.

The Water Ouzel is a bird of similar habits, manners, and places of abode, with the Kingfisher; only its dress is very different, being nearly entirely black. They are only seen on unfrequented parts of woody rivulets, at a distance from the habitations of man.

REVIEWS.

The Botanical Magazine for August contains the following plants:—

Gesneria bulbosa, Ker. A magnificent stove Gesneria, which produces its large scarlet flowers in October. It is a native of Brazil. It was figured many years ago in the Botanical Register.

Tulipa tricolor, Ledebour; *Tulipa patens*, Agardh. A very elegant species of Tulip, nearly allied to *T. biflora*, a native of the Altai Mountains. The flower has pointed petals, which are white, yellow, and green; and it appears in April. The species is very rare, though it was described

by Dr. Graham in the Edinburgh New Philosophical Journal in January 1836. It is quite hardy.

Bignonia speciosa, Graham. A very handsome stove climber, introduced from Buenos Ayres in 1838. The flowers are of a pale pinkish lilac.

Pernettya angustifolia, Lindl. A pretty little hardy shrub, with white flowers, belonging to the *Ericaceæ;* figured in the Botanical Register.

Oncidium monoceras, Hook. A small-flowered Oncidium, from the Organ Mountains of Brazil; very different from the common species of the genus. It was sent to England in September 1839.

Physianthus auricomus, Graham. A very handsome plant, which differs from the common species chiefly in being covered with spreading, harsh, yellow hairs. It is a native of Brazil. From the figure, the flowers are neither so large nor so handsome as those of *Physianthus albens;* and it will probably prove as hardy as that species, though it is marked in the Botanical Magazine as a stove-climber.

The Botanical Register for August contains—

Oxalis fruticosa, Aug. St. Hilaire. The shrubby wood-sorrel. A very interesting plant, with a woody stem, and leaves which resemble those of a kind of grass, but which on examination will be found to be only dilated footstalks, as in many cases the leaves will be found at their extremity. The plant is a native of Brazil, whence it has only lately been introduced; and in England it requires a moist stove.

Eria armeniaca, Lindl. An orchideous plant, with a large spike of flowers with richly-coloured bracts. It should be potted in peat or moss, and kept at "the warmest end of a damp stove." It is a native of the Philippine Islands.

Convolvulus scoparius, Willd. Canary rosewood. Oil of Rhodium is obtained from this plant, and its wood smells strongly of roses. It is a native of the Canaries, whence it was introduced many years ago. The flowers are white and small. It requires a greenhouse in England.

Salvia tubifera, Cav.; *Salvia longiflora*, Willd. A Mexican species, forming a bush about three feet high, with long racemes of slender crimson flowers at the end of every branch. It flowers in winter, and requires to be kept in the greenhouse. It is quite new.

Chorozema spectabile, Lindl. A new Chorozema of great beauty, with long drooping racemes of large orange-coloured flowers. It is a native of the Swan River, and forms a greenhouse twiner in England.

Berberis coriaria, Royle. A new Nepaul shrub, resembling *B. aristata*, but with "more lanceolate leaves, and shorter, less corymbose

racemes" of flowers. It has also red fruit, without any bloom. It is quite hardy, and flowers in June.

In the miscellaneous notices, three new annuals are noticed—one a Phacelia, and the others Godetias; and two new bulbs, *Rigidella immaculata*, and *Tigridia violacea*, the latter only differing from the common tiger flower in the colour, which is a rich purple. There is also a fine new Scutellaria, or skullcap.

The Botanist contains—

Osbeckia canescens, Meyer. A showy stove-plant, introduced in 1838, and before figured in the Floral Cabinet.

Brachycome iberidifolia, Benth. The great Swan-River daisy. Already twice figured during the present year.

Galeandra devoniana, Lindl. A handsome orchideous plant, from Brazil, introduced in 1840.

Epacris impressa, End. A well-known plant, frequently figured before.

The Botanic Garden contains—

Ribes fragrans, Lodd. A species with yellow fragrant flowers, before figured, several years ago, in the Botanical Cabinet.

Rhodododendron dauricum, Ker. A well-known plant, frequently figured before.

Cistus lusitanicus, var. *decumbens*. One of the innumerable kinds of gum cistus.

Trollius americanus. The American globe flower, introduced in 1806, but very seldom seen in gardens.

EXTRACTS FROM BOOKS.

PROCEEDINGS OF THE HORTICULTURAL SOCIETY FOR 1840.

It was reported by Mr. Thompson that *Madia sativa*, a new oil plant, had been sown in the month of September 1839, as directed in the instructions received with it from Germany; but that all the plants had perished during the following winter. Those plants, however, which had been raised from a sowing in the middle of March 1840, withstood slight spring frosts, and were in flower in the beginning of June.

Read a report by Mr. Gordon, upon *acclimatizing plants*. From the

numerous experiments upon this subject in the garden, it appears, 1st, that plants which it is intended to acclimatize should never be subjected to artificial heat during the winter that precedes their being planted out; that if obtained from seeds, as little heat as possible should be employed in raising them; and that starved or stunted plants are more likely to succeed than such as have been forced into a rapid and luxuriant growth. 2d, that the plants should not be committed to the open ground earlier than the end of May; that the soil should be poor, dry, and thoroughly drained; that if against a wall, the border should be protected through the entire winter by a roof of hurdles, thatched with straw, and projecting about three feet. A thermometer placed under such a covering did not, during the three months of February, March, and April, stand more than two or three degrees higher than one freely exposed; from which it appears that it is the dryness of the situation, and not its greater warmth, that renders a border, protected by a roof of thatched hurdles, so useful to tender plants.

Read the result of experiments by Mr. G. Gordon, *upon raising plants from seed.* He states that all seeds from North America and California should be sown in the autumn, as soon as ripe; to defer the sowing them till the spring, may in all cases be disadvantageous, excepting the case of annuals; that Mexican and Chilian seeds succeed best if sown in spring; that with regard to Europe and the north of India, trees and shrubs should be sown in the autumn, and annuals or perennials in the spring; that all seeds, of whatever kind, should be sown in dry soil, and not watered till they begin to vegetate; in the case of old or sickly seeds, to water them at the time of sowing, is to ensure their destruction by rotting; that shading is to be preferred to watering; and that one of the best constructions for the purpose is a pit, glazed with double sashes, like one in the Society's Garden: finally, that all seedlings should be potted or transplanted as soon as possible, except bulbs.

Mr. Gordon also reported that the great beauty of the Rhododendrons this year, notwithstanding the wet and gloomy summer of 1839, was, in his opinion, attributable to their fruit having been all destroyed in 1839, immediately after flowering.

The following communication was read from the Honourable and Rev. Wm. Herbert:—

"I wish to take this opportunity of communicating to the Society a plan I have adopted for cultivating Orchidaceous plants, which I think will be found deserving of notice. I took a strong post, or stem of a young tree barked, of a suitable height, and I had pieces of barked wood, such as are used for making rustic benches, cut into various lengths and nailed

on, crossing each other in different directions, with the knees or elbows pointing outwards, so that the whole had something the appearance of a Roman trophy; moss was then tied on where it was thought requisite, and bits of peat inserted in some of the supports, and the plants nailed or tied on with wire, or simply placed in the angles formed by the pieces of transverse wood. The plants in front throve exceedingly well, but those with their back to the wall were found to grow weak and perish. I then devised with my gardener, Mr. Seymour, who has great merit in carrying the plan into execution, to fix two iron pegs or pivots into the two ends of the posts, of which the lower one is let into a hole drilled in a stone, and the upper is inserted into a ring of strong wire fastened either under a rafter or secured between two. The result is that the whole of each trophy, with its plants, turns round at the slightest touch. The gardener moves them a little every time he comes into the house, so that no plant is either constantly exposed to the full light or totally obscured, and the most agreeable facility is given to examine the plants and to clean them. Each of these machines bears a marvellous number of species with ease, and the greater part of my collection is now spinning upon them, much to my satisfaction."

QUERIES AND ANSWERS.

In answer to the numerous queries which I have received on the subject of glass-cases for growing plants in rooms, I think the best plan will be first to give my readers a detail of the improved glass-cases invented by Sir John Robison, of Randolph-crescent, Edinburgh, which are generally allowed to be the best, and then to state what I have seen of plants grown in these cases.

DESCRIPTION OF A GLASS-CASE FOR GROWING PLANTS IN ROOMS.

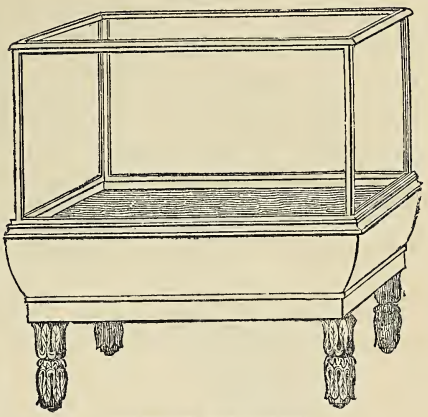
BY SIR JOHN ROBISON, SEC. R. S. E.

(*Extracted from the Gard. Mag.* vol. xvi.)

I have been getting up a plant-case of the kind described in the Gardener's Magazine for 1839 (p. 481), in which I think I have introduced some essential improvements. 1st, instead of an expensive brass frame for small panes of crown glass, I have substituted four sides and a flat top of plate glass, which, requiring only corner astragals and a top

frame of wood, is cheaper than the other, and greatly better-looking. The sketch fig. 69 will serve to give you some idea of it. The principal innovation is in providing for the perfect isolation of the air within the case from commixture with the air of the apartment it may be placed in. It appearing to me that the contraction of bulk consequent on reduction of temperature during the night must necessarily cause an introduction of air from the apartment at a time when it was most likely to be contaminated with sulphuretted hydrogen from the gas-lights and other causes, I have introduced a small tube through the bottom of the case, passing upwards to the surface of the soil. On the exterior end of this tube there is a coupling screw, by means of which I connect it with a flat bag of Mackintosh cloth hung under the case, half full of good air at the time of its attachment: the alterations of bulk consequent on changes of temperature, therefore, are provided for by the dilatation or shrinking of the bag, and no pressure is ever expected to pass air through the joints of the case. Unless, therefore, the plants themselves cause a permanent change in the constitution of the air (which some of the best-conducted experiments seem to render improbable), it will remain unvitiated, and be subjected to those compensating changes only which the plants appear to make in light and darkness.

Fig. 69.



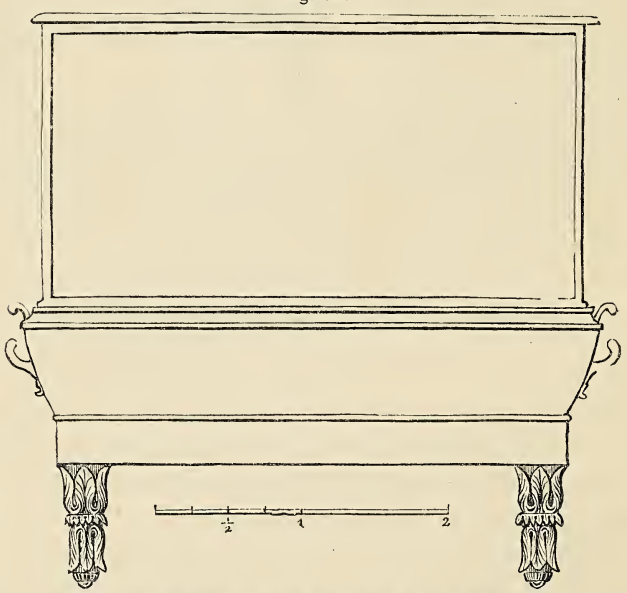
GLASS-CASE FOR PLANTS.

I do not mean to fill the case with permanent plants until May next, and in the mean time shall make use of it to flower hyacinths, &c. If you have attended to the subject of Mr. Ward's system, and should choose to suggest any experiments which the condition of this case may render practicable, I shall be happy to undertake them for you on your explaining your wishes.

December 28th.—I have filled the case for three quarters of its depth with soil, have set on it several hundred bulbs (from snowdrops up to hyacinths, &c.) and have filled all the interstices between the bulbs with green moss. I have given only two gallons of water (Mr. Ellis's appeared to me rather moist), and have closed all up: some time must elapse before any judgment can be formed from the appearance of the

vegetation ; but already the circulation of the water is beautifully shown, by the condensation on the glass plates, and the trickling down of the miniature rain. In the morning, the glass plate which is nearest to and parallel with the window-sash, and which has consequently been losing most heat, exhibits both the condensation and running down of the water in a remarkable degree ; while the inner plate, receiving heat from the air of the room, or by radiation from the objects near it, remains quite clear. I have planted a few bulbs in another receptacle (and in the same way as to soil and moss), by keeping which in the same room, but exposed to the air in the usual way, some judgment may be formed of the relative advantages of these different modes of raising such plants.

Fig. 70.



SIDE SECTION OF THE GLASS-CASE FOR PLANTS.

In the sketches (figs. 69 to 72), I have not represented the outlets for superfluous water, which are much in the same way as Mr. Ellis's above-referred to. Neither have I shown the contrivance for maintaining the identity of air first inclosed in the case ; it would have confused the drawing, and will be easily understood from the description. The size of the plates of the sides and tops of figs. 71 and 72 is three feet seven and a half inches, by twenty-two and a quarter inches. A piece of tinned brass tube, a quarter of an inch in diameter and a foot long, is passed through the bottom of the soil-trough at one corner, and soldered to the

lead lining. The part of the tube within the trough rises perpendicularly, and ends a little above the level of the surface of the soil. The shorter

Fig. 71.

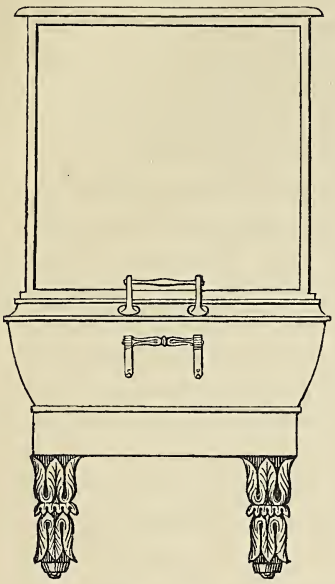
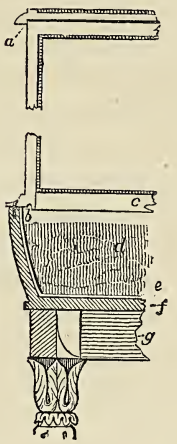


Fig. 72.



END SECTION OF THE GLASS-CASE FOR PLANTS.

portion, which is without the bottom of the trough, is turned horizontally, and terminates in a brass connecting screw, to which a corresponding screw of a small stopcock is attached : to this stopcock a second stopcock, previously inserted in the end or corner of a Mackintosh air-pillow, is to be screwed on. This air-bag should be of such dimensions that it may be concealed within the frame on which the soil-trough stands, in the hollow of which it may be supported by tapes or strings passed from side to side under the bag. At the time the bag is attached to the stopcock or the brass tube, the temperature of the air in the conservatory should be observed; and if it be at or near its maximum of elevation (and the air consequently near its maximum of dilatation), the bag should be nearly full of air; and *vice versâ*, if the temperature be low, the bag should be very flaccid when attached, in order that it may have capacity to receive the air expelled from the case when dilatation takes place on the temperature being raised. By this means the air contained within the case and bag, though constantly changing place, will never communicate with the external air, and its identity will be maintained with considerable exactness.

The double stopcock will afford the means of occasional separation of the bag, and of examination of the contained air under the influence of different circumstances.

In the section fig. 72, *a* shows the check or rebate in the top, which lifts up, and is faced with wash-leather; *b*, the drip for the condensed moisture from the glass; *c*, the glass-frame screwed down on the soil-box, with a slip of wash-leather between them; *d*, the soil in the box; *e*, the lining of lead, with an inner lining of thin wood; *f*, the bottom of the soil-box; and *g*, the frame on which the whole rests.

As before observed, I planted the case with some hundreds of bulbs of various sorts, on December 28th; and, at the same time, placed some of the same bulbs in earth in garden-pots, and others in water-glasses. Those in the case are distinctly gaining on those in the pots and glasses, and will flower before them. The case stands in a window facing a little to the eastward of south, and gets what sunshine the season affords. There is no fire in the room, and the temperature near the window rarely exceeds sixty degrees; and the pots and glasses are in a window looking N.N.W., but have the advantage of from two to three degrees higher temperature during the day; in the night-time the whole house is nearly uniform, at from fifty-seven to sixty degrees, being heated by one of Silvester's cockles.

(*To be continued.*)

MISCELLANEOUS INTELLIGENCE.

[The following may be interesting to such of my readers as reside in the country, and wish to do good to the villagers living near them.]

Reigate.—Encouragement of industrious cottagers.—On Friday evening, the 23rd July, 1841, the premiums offered for the best-cultivated Cottage Gardens within the parish were adjudged to the successful candidates, in sums of two sovereigns, a sovereign and a half, a sovereign, a half-sovereign, and five shillings; and the unsuccessful candidates, if such they could properly be considered, as enjoying the profit as well as the pleasure of the improved cultivation of their gardens, were each presented with some books on gardening, or rural or domestic economy, a copy of Watts' Hymns for the children, and half-a-crown in money, as denoting the general approbation. After supper, in the presence of a few friends

to rural improvement and the well-being of the labouring classes, the candidates, sixteen in number, were addressed with a few words of admonition and encouragement, on bee-keeping, on grafting, budding and pruning, the cultivation of the vine, the care of garden-fences, and the collection and preservation of manure; above all, they were assured of the great importance of the proper education and training of their children. "Most boys were pleased to work in a garden, and that propensity might be indulged both as a reward for particular application, and as a part of the daily occupation; and it was found that boys would acquire a better and more permanent knowledge of whatever they were taught in the school, if a part of their time was employed in active occupation out of doors, and by being engaged in planting a variety of vegetables, they had a constant succession of occupation, with its attendant and healthful thoughtfulness, anxiety, hope, inspection, and reward. The individuals so taught, if they became farming labourers, were sure to give satisfaction to their employers, for they had implanted in them the very elements of industry, combined with skill and ability to do any kind of work." In conclusion, the men were invited to commence a Cottage Gardeners' Society, for mutual instruction, to meet monthly to exchange books, and the occasional inspection of each other's gardens; and the party separated in the hope of meeting in greater strength and numbers next year.

FLORAL CALENDAR.

September is a busy month in the flower-garden, as it is the season for planting all kinds of tubers, bulbs, and corms. The principal tubers to be planted in this month are the Anemones, which are bought in a dry state in the seedmen's shops; and it is necessary to take care that the eye, which is very apparent on one side of the tuber, should be laid uppermost. The tubers should be planted in a deep rich soil, intermixed with a considerable proportion of cow-dung and vegetable mould (decayed leaves), and their crowns should be covered about two inches deep. If the winter is very severe, the bed should be protected by a thick layer of dead leaves, mats, or a frame. Ranunculus tubers are treated in the same manner, taking care that the claws are always planted downwards. The corms of Crocuses may be planted this month. They should be grown in rich soil, and should be planted in rows about two inches deep,

and the rows about six inches apart. The beds for Hyacinths should be about four feet wide, and divided by alleys twenty inches wide. The bulbs should be planted four inches deep, and about eight inches apart. The beds should be raised in the centre, to let the rain run off. The beds should be dug out about two feet deep, and filled with a compost of vegetable mould, sand, loam, and old cow-dung, and a coating of the latter should be laid over the bed. Tulips should be treated in the same manner, except that the beds should be formed of loam, and rotten horse-dung, about two years old, and that the bulbs should be only six inches apart. Most florists place a layer of sand over the beds, both for tulips and hyacinths, to plant the bulbs in; and this is a good plan, as the bulbs when buried in the soil sometimes become rotten.

All the tree-pæonies may be planted in this month. They should be grown in rich loamy soil, which should be at least fifteen inches deep; and they flower much better when slightly protected in spring.

Primroses of all the different kinds, and all the kinds of Polyanthus, may be planted this month; also many kinds of flowering shrubs, and all the evergreens. If a frost should come on towards the end of the month, sufficiently severe to kill the dahlias, the stems and leaves should be cut down, though the tubers may be safely left in the ground a month longer. Decayed flowers should be cut down, dead leaves swept away, gravel-walks rolled, and, in short, the whole garden prepared for winter. The Californian annuals, the Rocket Larkspur, and Coreopsis, and Centaurea should all be sown in this month; and some of them, particularly the Larkspur, never flower well if sown later.

September is also the month for propagating pansies, either by layers or cuttings, or division of the roots. The cuttings should be chosen from young succulent shoots, as those that are either hollow or woody will rarely strike, and if they do, they will not produce good plants. Or plants may be purchased. Those who desire a variety of kinds may probably not be aware that there is a nursery at Edmonton, kept by Mr. May, called the Pansy Nursery, in which there is of course a great variety of fine kinds. Pansies have a beautiful effect in small town-gardens; and they look particularly well in boxes, under a veranda.

Tigridia violacea. The violet Tigridia.

TIGRIDIA VIOLACEÆ, *La.*, *Link*, *Klotsch, and Otto.* THE PURPLE TIGER-FLOWER.

Nat. Ord. Tigridia, *Juss.*—Iridaceæ. *Lin. Syst.* Monadelphia Triandria.

Generic Character.—Perianth 6-parted; three outer segments large, ovate, spoon-shaped at the base, sessile; three inner ones smaller, unguiculate, sagittate, contracted in the middle. Stamens three, monadelphous. Stigmas bipartite.

Engraving.—Our Plate.

Specific Character.—Stem dichotomous at the apex. Leaves ensiform, plicately nerved, somewhat narrow; spathe externally margined with white flowers, small, violet-coloured, campanulate rotate. Some transversely-folded leaf-like appendages within the mouth of the flower. Stigmas bipartite, lobes subulate.

Description, &c.—This species, though very far inferior in size and beauty to *Tigridia Pavonia*, is yet well deserving of cultivation, from the deep rich purple of its flowers. It is a native of Mexico, and was first flowered in Europe at Berlin. The first notice of it published in Europe, was in a communication to the *Garten Zeitung* for 1838, by Professor Shclechtendal in Halle, of which the following is a translation :—"Among the numerous living bulbs and tubers from Mexico, there is a *Tigridia*, which on coming into flower, immediately showed it was a new species. I find that my late lamented friend Dr. Schiede had drawn up a short description of it in his MS. memorandums, under the name of *Tigridia violacea*. May it therefore retain this name as a memento of this excellent botanist, and as the colour gives it a more striking character than any hitherto known in this splendid genus! It is inferior in size to *T. Pavonia*, the circumference of the flower being only about that of a half-crown, and it is therefore more adapted for being grown in pots than in the open ground, although I have no doubt it would thrive very well and look very beautiful if planted as a border round beds of other bulbs." (*Garten Zeitung*, 1838, p. 233.) The following additional particulars are taken from a work now publishing in numbers at Berlin, by Professor Link, assisted by Messrs. Klotsch and Otto, entitled *Icones Plantarum*.

"This ornamental bulb was discovered by the late Dr. Schiede, and sent to this garden by M. Charles Ehrenberg, in 1838. It soon began to grow, and after the stem and leaves were fully developed, the flower was not long in making its appearance. It lasts but a short time, generally from eight in the morning to two in the afternoon. The time of flowering is in July and August. It goes to rest about the autumn, and should then be kept dry, in a house for Cape plants, and in a moderate temperature of from 5° to 8° of Reaum. (45° to 50° Fahr.) till spring, when it should

be planted in a mixture of river-sand and leaf earth mould, kept tolerably warm, and after it has begun to sprout it should be planted in an open bed. It is propagated by seeds, which ripen quite well with us; also by the young bulbs. It is much more tender in cultivation than *Tigridia Pavonia.*"—F. O.

THE EDITOR'S TOUR.

(*Continued from* p. 264.)

August 1st.—*Corehouse to Peebles.*—We were all sorry to leave Corehouse, which, in the bright sunshine of the morning on which we departed, looked more beautiful than ever; and we saw very little in the towns of Lanark and Biggar to compensate for what we had left behind. In the town of Lanark we were shown the house in which Wallace lived when his wife was murdered by the English Governor; but even the recollection of Miss Porter's Scottish Chiefs could not throw any poetry around the small, common-looking street house pointed out to us. In fact, the reality destroyed the charm; and I would rather not have seen it. The sight of many other places mentioned in the Scottish Chiefs, produced the same effect upon my mind. I read the novel when I was a girl, and have never seen it since, so that all the most striking scenes in it were enshrined in my memory as they appeared from Miss Porter's vivid sketches to my youthful imagination; and it is not at all surprising that they were very different from the plain truth. The town of Biggar has nothing interesting about it but the hills by which it is surrounded. I was disappointed with New Posso, the next place we visited, probably because I heard a great deal about it before I saw it. It is finely situated among beautiful hills, and with the surface of the ground finely undulated; and it has a beautiful stream running through it. I do not think, however, that art has lent any aid to nature; on the contrary, the plantations and laying out of the grounds did not appear to me to harmonise with the general character of the place. The principal feature is an immense quantity of Rhododendrons, Portugal laurels, and Laurustinus, disposed in groups all over the beautiful slopes; on the hills, and in the valleys, this gives a dotted, and at the same time a sombre air to the whole scene; and, indeed, when I stood on one of the heights looking down into the valley below, I could not help thinking the whole pleasure-ground looked like a vast cemetery, rather than a gentleman's park. The house seemed very handsome, but we did not go into it; but I admired an architectural terrace round it, furnished with stone seats, &c., which had a remarkably fine effect. There was a hand-

some mausoleum on the rising ground erected by the proprietor, Sir John Nasmyth, in memory of his wife, and three of his children, who died within a few days of each other of a typhus fever. There was also a curious old kitchen-garden, in which is preserved the stem of the first *Agave americana* that ever flowered in Scotland.

In the neighbourhood of New Posso are the remains of some interesting old castles, one of which is said to be that in which Macbeth murdered the king. The situation of these ruins is very fine, and as they stand on a hill with a barren heath stretching before them on one side, as far as the eye can reach, they are in perfect harmony with the legend. Stobo Castle, the seat of Sir Graham Montgomery, is a fine old place, very near New Posso. We crossed the Tweed, by fording it several times in the course of the day, and the ride by the banks of the river was very delightful; as we approached Peebles the views became very fine. The hills were green to their very summits, and their sides were clothed with plantations disposed in the most tasteful manner. The descent into the town, leaving the fine old castle of Nidpath, on the bank of the Tweed, to the right, was particularly beautiful.

August 2nd.—*Peebles to Melrose.*—I was delighted with the romantic situation of Peebles. The fine old bridge, Nidpath Castle hanging over the beautiful silver sheet of water formed by the Tweed, and the luxuriant plantations on the hills beyond the town, formed a lovely picture, which is vividly impressed on my memory. We soon, however, left it far behind us, and proceeded to Traquair, a curious old place, well known by the Scotch ballad "The bush aboon Traquair." This celebrated bush is situated on an eminence, directly in face of the house; and it was formerly a little grove or bosquet, but only two trees now remain. The house itself, with its ancient terraces, its avenue of old trees, and above all by the rampant stone bears affixed on the posts of the entrance-gates, reminded me of the dwelling of the Baron of Bradwardine. The appearance of the house was very singular, as it was divided into three distinct parts, consisting of a centre and two pavilions, with a double terrace connecting them, and with a court-yard covered with turf, so that the carriages of visitors had no means of approaching the entrance but by driving over the grass.

We then drove to the pretty little town of Inverleithen, where we happened to arrive during the celebration of the rustic games for which that place is renowned. While our horses were feeding we walked to the green, and were very much pleased with the strength and dexterity displayed by the candidates. After a delightful ride along the banks of the Tweed, and passing Yair house and plantations, where we were sorry

we had not time to call, we forded the river, directly in face of Abbotsford, and proceeded to that celebrated place. I was, however very much disappointed in it; as I have frequently been, in places that I had heard a great deal of beforehand. People when describing a place that has greatly pleased them, generally embellish a little; and the imagination of the hearer adds so much more, that disappointment is inevitable. The house at Abbotsford, though much smaller than I expected, was very interesting; but the garden we did not see, in spite of all our endeavours to get admission to it, and we were told that it was not worth seeing, as it had been all dug up, and planted with potatoes! The screen which divides this unfortunate garden from the court in front of the house is very handsome.

The road to Melrose was a very agreeable one, except as regarded the feeling excited by seeing fine plantations spoiling from want of thinning. Few things are more annoying to notice, when the mischief that is being done is once understood. To see a fine plantation, which we know it has cost a large sum of money to make, going to decay for want of thinning, when we also know that the trees taken out of it would more than pay all the expenses incurred, is absolutely provoking; and I often feel inclined to call on the proprietors of these neglected woods to give them a few useful hints, forgetting how very unlikely it is that anything I could say would have the smallest effect.

Melrose Abbey is the most beautiful ruin I have ever seen, and the manner in which it is kept is perfection. The colour of the stone of which the walls are built is a rich reddish hue, which gives a deep warm tone to the ruin that adds greatly to its effect; and the ground both within the walls and in the adjacent burying-ground is perfectly level, and it is covered with a fine smooth turf, the grass of which is kept short by a few sheep. Two or three trees which have sprung up accidentally, and a plant or two of honeysuckle and ivy, both of the native kinds, have been allowed to grow within the walls: but this is all; there has been no planting, no training of ivy,—nothing, in short, has been done which can take off the attention from the ruin; and the sole purpose for which modern art has been exercised is to show, to the greatest advantage, the beautiful remains of antiquity. We had also a very intelligent guide, a young woman, who said little, and who contented herself with taking us to the points which afforded the finest views, and answering our questions. We went into the ruins when the sun was yet above the horizon, and we remained in them till it was quite dark, watching the beautiful effect of the deepening shadows as the light gradually faded away, and at last returned to the inn, feeling, for almost the first time since we entered

Scotland, that we had seen a celebrated place that fully answered the expectations we had formed of it.

August 3rd.—*Melrose to Dryburgh and Dalkeith.*—We were now completely on classic ground, and we traversed the beautiful road between Melrose and Dryburgh in high spirits, skirting the Eildon Hills so celebrated in the Border poetry, and looking with delight on the varying scenes presented by the lovely and romantic country we were passing through. The first shock to our romance was given by the ruins of a suspension bridge; which having been broken by a high wind, hung dangling over the stream, in a most disconsolate manner. I was very much struck with the ludicrous effect produced by this broken bridge; and for the moment I was puzzled to discover why the feelings it excited, were so very different from those produced by the ruins of an old abbey or castle. The reason, however, I believe, is the different nature of the materials of which the edifices were formed; aided of course, in many cases, most decidedly by the historical association connected with the building we are looking at. The massiveness of the materials goes, however, very far; as a ruined cottage in Scotland is often a very picturesque object, from the large size of the stones of which it is composed; while a ruined brick cottage only presents a miserable appearance of poverty and neglect. Thus the broken bridge, with its chains hanging loose, and its unfastened planks projecting, of different lengths, could inspire no feelings of sublimity, from the frippery nature of the materials of which it was composed.

The banks of the river at Dryburgh were covered with fine sand; and on them grew some beautiful wild plants, among which I noticed *Potentilla verna*, and an *Ambrosia*, with flowers of a most brilliant blue. The colours of all these flowers were remarkably intense; no doubt from the roots of the plants having reached the water, while their foliage and flowers were exposed to the full influence of the sun and air. Having been told that the ford was dangerous, we hailed a boat, which was rowed across by a woman. We asked her if the ford was passable by a carriage. "Oh yes," said she; "she (that is, the ford) is not very deep. You will get across easy enough;" and so saying, she was going back again quite contentedly. As we had given her the trouble to come, however, we let the carriage and horses cross without us, and passed the stream in her boat, paying her sixpence, instead of threepence, which she asked for our passage.

Dryburgh Abbey is the very reverse of Melrose. The ruins are fine in themselves; but they are choked up by a small garden, with a paltry little greenhouse, such as would suit a third-rate suburban villa near

London, within the walls! I never saw anything more incongruous. It was like a cobbler's stall fixed in the centre of the court-yard of a palace; and it reminded me of what I have heard of the booths and small shops, which used in former times to disgrace Westminster Abbey. In one corner was a bust of a former Earl of Buchan, by whose orders we were told this sacrilege was perpetrated, with a flattering inscription under it, which I had hardly patience to read; for among his other qualities it eulogised his good taste! The guide also was a very bad one, ignorant to a degree that could scarcely be conceived, and as garrulous as a parrot; she would not allow us to enjoy the beauties which the ruins, disfigured as they are, still possess. The tomb of Sir Walter Scott, interesting from its simplicity, is placed in a recess covered with turf, and with a monumental tablet at the back. I was very sorry, however, when I saw it, that the great novelist had not rather chosen Melrose (to which I understand he had an equal right) for his resting-place; as there the quiet and repose of the place, and the circumstance of its having been immortalised by his pen, would have rendered it peculiarly appropriate; whereas, it seems almost like profanation to let such a man lie among the frippery at Dryburgh.

Among the other incongruities of Dryburgh Abbey, is a vault decorated by busts, which the woman misnamed most absurdly. A female bust with the hair plaited, and twisted into a knot behind, she told us was Virgil; and another with a high-peaked hat, and a lace ruff, she said was Alfred the Great! There were some noble trees in the grounds near the abbey; and among others, some fine cedars of Lebanon, and a large upright cypress, above twenty-five feet high. On returning we crossed the ford in the carriage with the greatest ease, and proceeded along a beautiful road to Earlstone, the whilome residence of Thomas the Rhymer, so often mentioned by Sir Walter Scott, in his Border Minstrelsy. Among the beautiful villas which stud the sides of this road, is Cowdenknows, celebrated in the old song the "Bonnie Broom of Cowdenknowes."

Thirlestane Castle is the ancient seat of the Earls and Dukes of Lauderdale, but it is now undergoing repair in very good taste by Mr. Burns, the great Scotch architect. We visited the rooms, which still remain unaltered, and found them in the style of James I., with thick stuccoed ceilings, frequently concave in the centre, as though to form a small dome there, with the other part flat. The walls are immensely thick, and there is a large outside stair. The house is built so as to form three pavilions, like that at Traquair; and the ground round it would form a fine situation for terraces or a terrace-garden. The kitchen-garden has

been newly made, and it appears an excellent one. The hothouses are heated by an improvement on Run's method; and the furnaces are so contrived as to consume their smoke. The fruit-room is lighted from the roof, with an inside shutter about a foot from the window, so contrived as to let up and down by a pulley. The mushroom-house is built with a space under the floor for forcing rhubarb, the boards being made loose, so as to take up when required. The walls of the garden are of stone.

The town of Lauder is a dull gloomy-looking place, with a wide space in front of the market-house, where the rebellious subjects of one of the Jameses hung the favourite minister before his eyes; the king being in the market-house at the time, but unable to prevent the murder. The road across part of the Lammermuir hills was also dreary, being in several places marked with tall white posts, tipped with black, to serve as a guide in cases of deep snow. On passing Souter hill, however, the prospect changed, and a beautiful view of Edinburgh and the Frith of Forth burst upon us. It soon, however, disappeared; a thick mist rising, and seeming to swallow up the objects one after another, till at last we could only see the road before us by the time we arrived near Dalkeith.

August 4th.—*Dalkeith.*—After passing the night at a very comfortable inn in the town of Dalkeith, we went as soon as we had breakfasted to visit the numerous beautiful seats in the neighbourhood. To do this we returned along part of the road we had traversed the night before. We noticed particularly the effect produced by the chimneys of the steam-engines on the farms, and by the circular walls round the openings to old coal-pits, which looked like little martello towers; and the old limekilns, which resembled the remains of ruined castles; but the most interesting object, in a gardening point of view, was a number of little basket-like screens placed round the young hollies and other plants, to protect them from hares and rabbits. These screens were constructed with branches of larch spray stuck in the ground, and woven together over the top of the plant, so as to form a case generally about a foot high and two feet in diameter. A similar screen might be made to serve as a protection from frost.

Oxenford Castle.—This fine place belongs to the Earl of Stair, and it is approached over a handsome bridge; the road leading through a plantation of noble trees. The castle itself is very fine, and it is being enlarged in very good taste by Mr. Burns, the celebrated Scotch architect. We noticed here, what we afterwards saw in most of the large houses in Scotland, a luggage door and stair, to admit of the luggage of visitors being conveyed to the bed-rooms without passing the principal hall and staircase. The pleasure-grounds are very beautiful, the shrubs

being so arranged as to form alternate bays and promontories on the lawns, this having been done by the direction of Lord Stair, who superintended its execution himself. The park is being enlarged and improved, so that in a few years the place will be a most magnificent one; the only blot is a new approach that is being formed, by which a corner of the castle will be first seen by the visitor, who will thus be led to form a very erroneous idea of this noble mansion.

Preston Hall is a very fine place; and the park is covered with magnificent trees, particularly larches, sycamores, ashes, elms, and beeches, all of enormous size. I think I never saw anything finer than the view of the park from under the branches of these fine trees. The kitchen garden was very good; and we saw there what we had not before met with in Scotland, viz., good ripe figs. The gardener told us that he had had ripe figs ever since May 14th, and that he has about forty different sorts. The Brunswick fig has ripened fruit in the open air; and I may here mention that the Brunswick fig is the best of all kinds for a small garden, as it is very hardy, and an excellent bearer. Newbattle Abbey, the seat of the Marquis of Lothian, was the next place we visited, and I was quite delighted with the appearance of the house, and the flower-garden with its fine old dials, both being beautifully situated on the banks of the South Esk. There is here a remarkable beech, of enormous size, the branches of which form a beautiful canopy, so dense that a person may sit under it during heavy rain without being wet. In the park are some fine sycamores, and Scotch elms. The kitchen garden, I understood, was very curious, but I had not time to walk through it, as we had appointed to return to Dalkeith by one o'clock.

Dalkeith House.—I think I never was more disappointed with any place than with this; though probably it was in part owing to the circumstance of our having to walk to it a long way through a burning sun. When we arrived at the inn, we found the person Mr. M'Intosh had sent to meet us, gone; but as we were told the park gate opened into the principal street of the town, we did not trouble ourselves about this, and ordering the horses to be put up, we walked to the duke's gate. Here we were most unexpectedly refused admittance. Even the magic name of Loudon, before which park gates and garden doors generally fly open, had no effect. The man said the duke was at home, and he could let no one in without express orders. In vain we told him we had permission; unfortunately we had not the letter with us, and he would not believe what we said, and we had no resource but to retrace our steps to the inn to hunt out the permission, or to proceed to Mr. M'Intosh's dwelling, which the man said was half a mile off. We chose the latter course, and under

a burning sun, and along a dusty, shadeless road, we climbed a steep hill, and after walking a mile and a half, instead of half a mile, we reached Mr. M'Intosh's house. We were instantly admitted, but I was too much tired and annoyed to do justice to the fine kitchen-garden of twenty acres in extent, notwithstanding its beautiful situation with the new church of Dalkeith full in front. I was also disappointed in the grounds, which I thought very inferior to those of several other places which we had visited. In one part was a curious Elizabethan conservatory, very rich, but very heavy, with immense vaults beneath it. When we came out, the man at the gate apologised; but I really could hardly forgive him for the trouble and annoyance he had caused us.

(*To be continued.*)

ESSAYS ON ORNITHOLOGY.

BY MR. MAIN.

(*Continued from page* 274.)

Columba, or Pigeons.—The common stock-doves usually build their nests and breed on rocks. All our tame pigeons are varieties of this species; and what is remarkable, the wild ones, in considerable flocks, will, in severe winters, unite with the tame ones, and avail themselves of their warm cots on nights, and continue to do so till the breeding season invites them to their native haunts. So numerous are the varieties of this species, that pigeon-fancying is a business of itself, and the traders deal in curious specimens, sometimes of considerable value. In former times it seems that tame pigeons were so universally kept that they became a pest to farmers, whose remonstrances probably occasioned the enactment of a law which limited the number of dovecots to one only on each manor: but this law is not now much regarded.

The Woodpigeon is a very beautiful and very common inhabitant of our woods everywhere. In the breeding season they are much more familiar than at other times, and seem to woo the company of man, often building in low trees in gardens, close to the house. Their nest is only a few sticks, laid in a horizontal position on a branch of the same inclination, but without raised edges, or any material intended for warmth. They, as well as all other pigeons, are of a very warm temperament, and perhaps it is on this account that a wicker-work cradle is so necessary for their personal comfort while nestlings. Although they bring forth only two at a hatch, and this only twice in the summer, it is wonderful to see

such flocks of them as congregate and live together through the winter. In this season they roost on the tops of high trees, and then live chiefly on beech-mast, acorns, and other seeds which they find in the woods, or on what they can still find in stubble-fields. When snow lies on the ground they fare hardly, and are often fain to fill their crops with turnip leaves, or those of coleseed, or even dig into the turnip bulbs for temporary subsistence.

Their eggs are often put under a tame pigeon in dovecots, and there hatched and reared; but though they will continue to live among the others for a month or two, they only get so far civilised and tame as to fall an easy prey to the relentless gunner, or fly away to join their wild relations in the woods.

The Turtle-doves arrive in England from warmer countries in pairs about the 1st of May, and immediately set about the work of nidification. They build a shallow nest, in a thickly-branched tree at no great height from the ground. Their food is chiefly small seeds, particularly those of tares, both wild and cultivated. They fly with remarkable swiftness, always in pairs, and seem to return again to their natal groves, or at least to have predilections for particular districts of country. The turtles are the most harmless of beings, and their plaintive cooing is one of the most agreeable rural sounds, giving the idea of quiet solitude and repose. If taken before the young are full-feathered, they are easily tamed and kept in aviaries. Their faithfulness to each other is proverbial: it is true, twins they are born, and as twins they ever live: a single turtle is never seen but when the hen is sitting, and then but for a very short time. But whether when one dies the other cannot survive, is a circumstance which cannot be ascertained by observing them in a wild state.

The Pheasant is a well-known bird, and whether originally a native or not, is now so universally distributed, that they are perfectly naturalised. In their manners they are much like the domestic cock and hen; the male pheasant crows; the female makes a nest among dry leaves under a bush, and both roost on the lower branches of trees. The males are very salacious, often pairing with the hens from the farm-yard, or even with a hen partridge. When it is wished to encourage and preserve pheasants, they demand much attention from the keeper. Their natural food is grain and ant-eggs, and they are partial to those woods and coppices where these last abound. They have many enemies: when the hen is sitting, polecats, stoats, and, above all, the fox, destroy many of them; and all the time the chicks are unable to fly to roost, they are in jeopardy from these nightly prowlers. But their most fell foe is the incorrigible poacher, who on moonlight nights stalks under the

trees where the birds usually roost, and with a long taper pole strikes them fluttering to the ground. When poles are too short, the pocket fowling-piece is had recourse to; and though these vagabonds are often detected and punished, the poacher will remain a poacher as long as he lives.

The pheasant is remarkably fond of brank, and nothing is better to allure them to a wood than to throw down heaps of the unthrashed straw and chaff of this grain in different parts of the same. A small field sowed with this grain near a preserve is very attractive, as they will fly a great way to obtain a feast of this kind of food, especially where beech-mast is scarce.

Pheasantries are one of the ornaments of a nobleman or gentleman's pleasure-ground. They are formed like a vast cage of wire-work, with an opaque roof, and with fire flues under the floor for warming the apartment in winter. The exotic pheasants are mostly natives of China; and the principal are the peacock, golden and silver species, all elegant birds. Our domestic cock and hen belong to this genus; but they are of foreign extraction.

The Cock of the wood, or mountain, is a large bird, weighing sometimes above thirteen pounds. They are only met with on the mountains in the north of Scotland. They appear to be adapted to snowy regions; for all the species are feathered to the toes. They live chiefly on the wild berries and seeds indigenous on the moors. The black-game, or heath-cock, is about one-third of the size of the preceding; and the white-game, or ptarmigan, weighing nearly one pound. In summer this bird is pale brown, but perfectly white in winter. Another species is the grouse, or red-game, larger and heavier than the last. All these moor-game are objects which attract numerous parties of sportsmen to beat those inhospitable wilds in the autumn of every year; grouse-shooting being a principal branch of the fowler's amusement, and so important is it esteemed, and so eagerly pursued, that some keen individuals of fortune make a sort of campaign of the affair, having camp equipage, a carriage, and not only men-servants, but in some cases being even attended by their old fat female cooks.

Those of the genus which follow have naked legs, namely—the Partridge, which is a well-known bird, and abundant over all the agricultural face of the country. Were it not that they nestle and hatch their numerous broods in standing corn, they could not possibly be so plentiful as they are known to be, considering the dreadful slaughter made of the coveys every 1st of September, and every week-day for months afterward. This gunnery, of itself, it might be imagined, would be enough to thin

the stock of partridges; but we must also consider that, besides the licensed destroyers, the poachers catch by nets whole coveys at one fell swoop. The net for this purpose is called a flue-net, made in the form of a jelly-bag, that is, very narrow at bottom, and very wide at the mouth. At opposite sides of the latter, long, narrow pieces are fixed, called the wings. When the net is set, the narrow end of the flue is first pegged to the ground, and the mouth drawn forward and extended laterally, and also fixed on a prop. The upper leach or selvage of the mouth is propped along its whole width two or three feet high, to give an easy entrance to the covey when driven into the flue. The wings are next stretched out, receding from each other as they are carried away from the mouth. The net is always set in a field where a covey is known to lie; and when it is full-moon light, the net towards the moon. A poacher, having an old stalking-horse at the opposite side, begins to traverse the stubble forwards and backwards, always keeping on the shady side of the horse, and making towards the net. At last he moves the birds, and he can see them running before him towards the net (for they rarely take wing unless they happen to see the man): he therefore keeps his zigzag course behind the birds till they are within the wings, and at last within the flues, where, when the props are pulled down, the covey is caught. Thousands of birds are taken every year by this and other methods of netting the coveys, and, as they are taken alive, fetch a higher price than when dead, especially when commissioned for stocking preserves.

The partridge does not make much of a nest, contenting herself when she has found a suitable hollow with only drawing into it a little of the stubble which lies around. She lays from twelve to twenty eggs, and is very cautious on leaving or returning to them lest her nest should be found, always running a good way from it before she takes wing, and alighting at a like distance on the opposite side when she approaches it. The young can run and feed as soon as hatched, and then are the prettiest little creatures imaginable. When following the mother at this age, if by chance they are surprised by a person coming suddenly upon them, the distress of the poor affectionate mother is extreme: with doleful cries and distracted action she rises frequently by jerks, and as suddenly drops as if shot, still struggling away as if both wings and legs were broken, to beguile the notice of the intruder from her helpless young, which are all closely squatted invisible among the clods, where they lie without voice or movement until they hear the cheering, quietly-pronounced *chuck*, *chuck*, of the cunning mother, which so soon as they hear, they rise, utter their feeble cry, and follow the mother into the thickest cover. This scene we have many times caused and witnessed with much attention,

and could not help remarking the great share of instinct possessed by both the mother and her chicks for self-preservation, exhibited by the exercise of cunning and deception.

Partridges are bold, courageous birds, and will fight and drive birds thrice their size. If a crow alights near their brood, he is instantly set upon by the old birds, and with such fury that the crow is quickly compelled to retreat. And if a flock of rooks alight in the same field, and near a full-feathered covey, the whole, led on by the parents, with elevated tails and ruffled feathers, attack the rooks with such determined impetuosity that they are glad to retire.

The Quail (*T. coturnix*).—This is a summer visitor, and breeds with us occasionally, but they are never plentiful. They resemble the partridge in shape and general colour, and are also very like them in manners; and even excel them in pugnacity, though only half their size. This propensity of the quail has been encouraged by sporting gamblers in many countries, but nowhere so generally, nor is the sport of fighting quails so ardently followed, as it is in China. For there it is no uncommon thing for a gambler to risk *one thousand dollars* on the issue of a battle between two game quails! The sport is said to be less cruel than that of fighting cocks, merely because the combatants are so diminutive; but this circumstance can be no palliation of the inhumanity of pitting two gallant-spirited little animals to pull each other to pieces. Quails are kept in cages by bird-fanciers and poulterers in this country, mostly procured from the Continent, and sold for adding to the luxuries of city feasts.

The Skylark, emphatically so called because all the most happy and joyous part of the bird's life is spent in the air high above the earth, even in the regions of the clouds, or as Shakspeare has it, at "heaven's gate." And though they sometimes sing perched on a clod on the ground as they do in a cage, yet their exertion to be heard produces a quivering convulsion of their whole frame, showing that vibration of the wings seems to be necessary to mark the time or divisions of the strains. This lark makes a nest on the ground, and generally on open commons where furze or other low bushes grow; the nest is never fully exposed, but just within the margin of a low bush. Nor is the nest easily found, except by those well acquainted with their manners, the entrance being much narrower than the nest itself. The latter is pretty substantial, formed of slender bents on the exterior, and with hair and other soft matters within. They lay four or five, rarely six, roundish-shaped eggs, of a dull white colour, thickly speckled with dark brown and black, especially at the larger end. The nests are not readily found until the young are hatched, and then, as the old ones are incessantly flying to and from the nest, watching their

movements for a few minutes will discover the spot. Their manner of flight, and peculiar call when so employed, are also guides to the bird-nesting boy in his researches. The first is a slow, hovering style of flight, as if uncertain where to alight; and the second is a tender, fondling kind of cry or note, indicative of anxiety. Another thing, they never alight very near the nest, but always at some distance, and walk silently and cautiously towards it: in leaving, however, they are less cautious, as they spring upwards directly from the nest, and this being marked as near as possible, the nest is found without difficulty.

The sky-lark sings from Candlemas to Michaelmas old style, and sometimes later. It is certainly the finest song-bird of this country, if we consider the vast number of distinct passages which are introduced in his long-continued song. In this respect it is more like the changes and variations of a concerto than a simple air of only a limited number of notes repeated again and again. The song may be called monotonous, but to an attentive ear much pleasing modulation will be heard, and very little disagreeable repetition perceived. The intonation is not so rich as the voice of some of the finches, nor so brilliant as the nightingale, but for variety the lark is matchless. There is also more method perceivable in the song of the skylark than in that of other birds. While ascending, which he does on a spiral curve, his notes are rapid and unmethodical, but when arrived at the singing height, his notes are more moderately enunciated; and if the weather be calm, he continues to fly round and round, in horizontal circles, during the song; but if the wind is high, the bird poises himself head to wind, and sustains himself by frequent bounds nearly in the same place for an hour together, singing merrily all the while. It is at this period of his song that his passages are most distinct and most interesting: he often comes to *a rest* of two or three bars without altering his regular bounding motion. At last the bird comes to the third division of his song, and this is performed while he gradually descends. The passages are more brief, his tones are less forcible, and the strains melt at last into a well-modulated *cadenza*, when the bird drops (from a height of from twenty to thirty feet) like a stone to the ground.

Sky-larks congregate in vast flocks during winter, and roost in the middle of open fields, where great numbers of them are caught by netting, for the poulterers.

The Wood-lark is so called because it frequently sits and sings on trees. This also sings while on the wing, and, moreover, on moonlight nights, especially if another or any other bird begins a song. Their song is a short strain of not a dozen notes, begun rather high and gradually falling to the close. This is frequently repeated without variation, but

their few notes are remarkably soft, mellow, and pleasing, especially at night, when most others are still.

They nestle on the ground, making a nest of straw, lined with hair and small fibres of any kind, laying four or five eggs of a dirty white with darker spots. We have often found their nests in turnip-fields, neatly placed under the shade and shelter of a large leaf. The young ones accompany the parents for several months after they leave the nest—a sign that they breed but once in the season. They are paler in colour than the sky-lark, somewhat less in weight, and of a shorter chubby form. They are also more rare, and in some counties in the south of England they are not seen for years together; when in a following season they are plentiful.

The Tit-lark is the smallest of the genus, and except its shrill tit, tit, has no other note either of love or fear. Small parties of them are seen in winter on open downs or commons flitting before the traveller, and repeating their tit, tit, as they fly. They resort to furze commons to breed, and make a nest, which is with great difficulty found, by reason of the smallness of the entrance; the nest itself being in a cavity within the edge of the shrub. They lay six or seven small, very dark-coloured eggs; and it seems they are successful breeders, as they are very numerous over all the island.

Lesser Field-lark, or Pippet. This is a summer visitor, and is often confounded with the preceding species, though no two birds of the same family are more different in their manners and economy. The pippet nestles in the open fields, among corn or grass, and is easily identified by his graduated tit-tit song, and by sitting on and frequently springing silently up in the air a few yards, and then slowly descending on outstretched wings, singing as he drops again to his favourite station. This action and song are continued daily throughout their breeding season, after which the young and old flock together and become undistinguishable in the throng of summer visitors. The pippet is one of the first heralds of the return of summer, and as they distribute themselves over the farms and are seen springing up from every hedge-row tree, add greatly to the general gaiety of the season.

Greater Field-lark. This is a mute bird; is coloured very much like the pippet, but is of a less elongated shape, more resembling that of the wood-lark. They are, however, very rare; we never having seen more than two pairs during our residence of above forty years in a farming district. They nestle among tares or any such thick-growing crop. Their nest is formed of slender straw, lined with fibrous roots, and they lay four or five roundish speckled eggs. One peculiarity of their manners,

and by which they may be known among so many similarly coloured birds, is this: when they leave their nest, they fly to the nearest hedge, but instead of alighting on the topmost branches as most other birds do, they invariably perch on one of the lowest, and there sit musing; but not a word escapes their lips. On this account, and the stealthy manner of their appearing in public, it may happen that this bird is a nondescript. Is it the red lark said to be seen occasionally in Middlesex?

The crested lark, a bird somewhat smaller than the sky-lark, said to be common in Yorkshire, is unknown in the southern counties; and the willow and grasshopper larks described in old books are now found to belong to other genera.

MR. ELLIS'S PLANT-CASE.

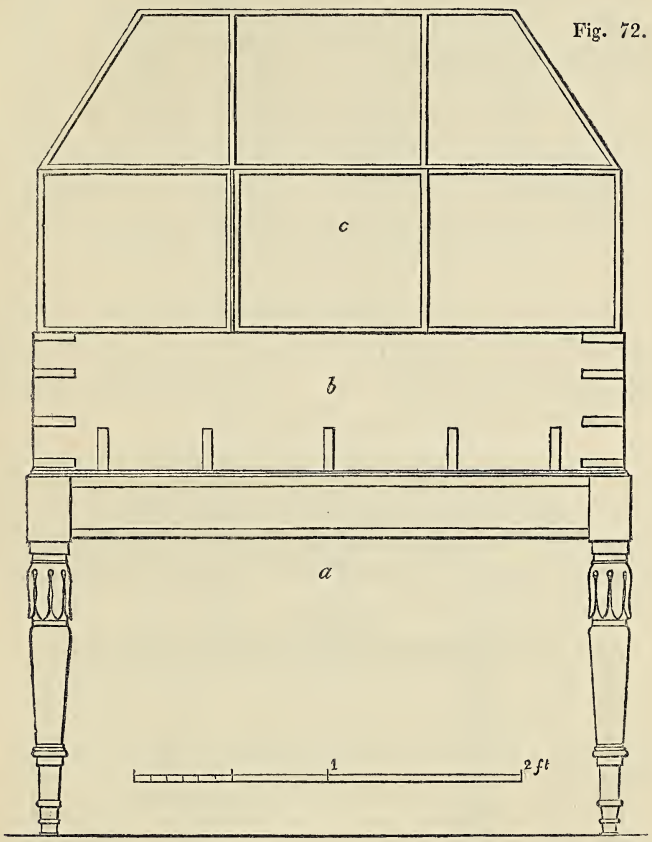
In my last number I gave some account of the plant-cases of Sir John Robison; and since that was published I have seen them myself. They are very handsome, but the plants, as in all the other cases I have seen, appear but dimly through the glass, on which there is a constant and heavy steam. In the plant-cases of Mr. Ward, the inventor of the system, this steam has raised a kind of moss or lichen, which makes the inside of the glass green, and has a very unpleasant appearance. In the plant-cases of Sir John Robison and Mr. Ellis there is no green; but the steam is still there, and the drops of water obscure the plants. The plant-cases of Mr. Ellis, which are very elegant, and which were designed by Mr. James M'Nab, are now, in consequence of Mr. Ellis's death, in the council-room of the Caledonian Horticultural Society; and the plants contained in them are growing beautifully.

The following is Mr. Ellis's own account of his case:—

"Some gentlemen having expressed an intention of fitting up cases for preserving plants, I have requested Mr. M'Nab to furnish me not only with a copy of his design, but also with a statement of the leading particulars which require to be attended to in the construction. As the apparatus was to be placed in the window of a drawing-room, its form and dimensions were determined in accordance with that idea. It is composed of three parts: the stand (fig. 72 *a*), the box (*b*), and the glass roof or cover (*c*). The stand is one foot ten inches in height; the box, eight inches and a half; and the cover, one foot seven inches and a half; making the total height four feet two inches. The stand on which the box rests is made of mahogany, and supported on four legs, furnished with moveable casters. The box contains the soil, and is made of well-seasoned

St. Domingo mahogany, previously steeped for a fortnight in Kyan's preservative composition. Its sides are one inch and a quarter thick, mitred and dove-tailed together at the corners. The bottom of the box is of Honduras mahogany, one inch thick, and is formed of numerous small pieces, framed and flush-panelled, and so arranged as best to resist the yielding of the wood, in consequence of the mass of moist earth which it

Fig. 72.

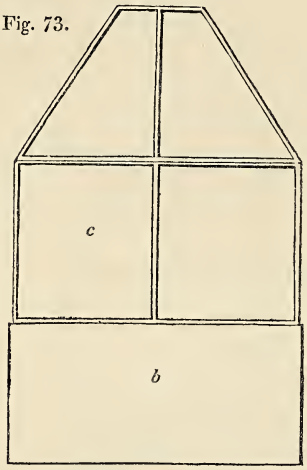


Elevation, showing one side of the stand (*a*), box of earth (*b*), and glass cover (*c*).

has to bear. To give it greater strength, two cross, or tie, pieces stretch from side to side, and are dove-tailed into the sides: they are placed at equal distances from the two ends, and thus divide the box into three compartments; but as they have large open spaces at the bottom, and through their centres, they permit the moisture to percolate freely through the whole of the soil. The bottom, being properly fitted, was fixed to the sides by brass screws; and the brass bands at the corners and bottom are

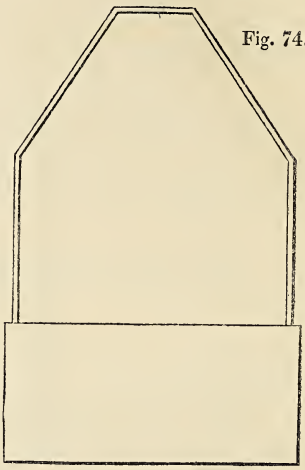
fixed on with brass nails; no iron being used in any part. Along the upper edge of the box a groove is sunk to receive the lower edge of the glass roof, which rests securely in it. This groove is lined with lead; its

Fig. 73.



Elevation of one end of the box (*b*) and cover (*c*).

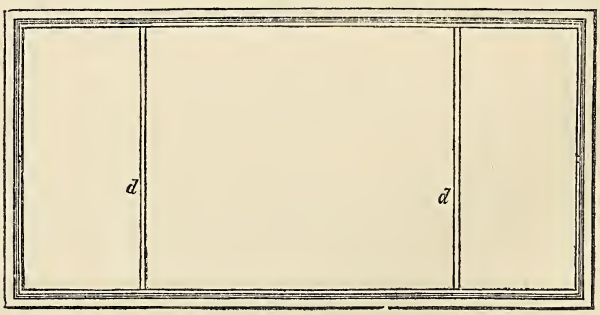
Fig. 74.



Cross section of the box and cover.

inner lip is one-sixteenth of an inch lower than the outer; and at each end is a notch one-eighth of an inch only above the bottom of the groove, to allow the condensed moisture, which trickles down the inside of the glass, to flow back to the soil. Instead of lead, the lining of this groove should

Fig. 75.



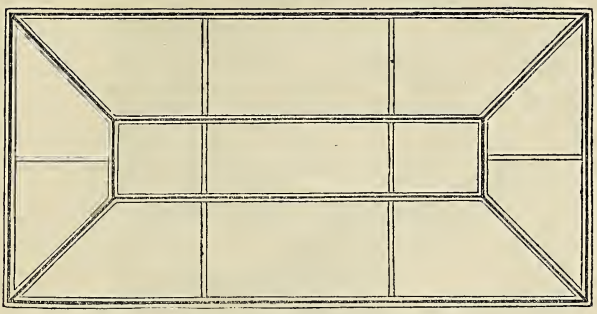
Plan of the box, showing the two partitions (*d d*).

be of brass, which would prevent the galvanic action which arises from the contact of the two different metals.

It only remains to speak of the glass cover: its framework is made of brass, with a door on one side, made to fit close, but which can easily be

opened when needed. The glass used for the cover is flattened crown-glass, except for the door, which is plate-glass. The glass panes were fitted into the frame with great care, and with a putty specially made for

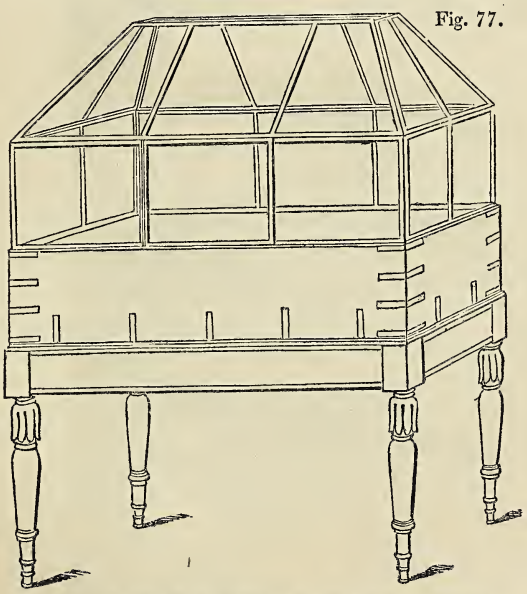
Fig. 76.



Vertical profile, showing the top of the glass cover.

the purpose; this putty received afterwards three coats of paint. Along the top of the roof, two brass rods extend, from which small pots containing plants may be suspended. The whole of the framework is well

Fig. 77.



Perspective view of the stand, box, and cover, complete.

fitted, and nicely put together, so as to preclude, as far as could well be done, all interchange between the air in the case and that in the room. It was before stated, that the total height of the case is four feet two

inches; its length is three feet, and its breadth one foot and a half. Its form and dimensions are accurately represented in the beautiful drawings of Mr. M'Nab which accompany this paper.

Fig. 78.

Longitudinal section, showing the plants growing in the soil, and suspended from the brass rod under the top of the glass case.

2. *Preparation of the soil, and mode of planting.*—The soil, as prepared by Mr. M'Nab, consisted of the following ingredients, which were placed in the box in the order now to be stated. Its bottom was covered with broken potsherds to the depth of two inches, over which was spread one inch of very turfy loam; the remaining space in the box was filled with soil, composed of equal parts of peat and loam, with which a portion of rough white sand, amounting to about one-twentieth part, and free from iron, was mixed. After being planted, between three and four gallons of water were freely showered over the tops of the plants from a fine-rosed watering pot; this was continued till the water ran freely from two holes made in the bottom of the box for that purpose. After draining for twenty-four hours, the holes were tightly fitted with corks; and the glass roof, or cover, was then put on.

The case, with its plants, was placed at the window allotted for it. The window has a southern aspect, and the morning sun strikes upon it several hours in the day. During this period, the temperature within the case was several degrees higher than that in the room; while in the absence of sunshine, or when a fire was kept up, the temperature of the room was highest. At other times, when neither sun nor fire prevailed, the temperature within and without the case rose and fell simultaneously. At no period of the winter did the temperature in the room fall to the freezing-point; nor, it is believed, rise in summer higher than to about eighty degrees. No fresh water was given during the whole period; nor was the door of the case opened but to remove a dead leaf or plant that had damped off. Once only was the cover taken off, in order to check the *Lycopodium stoloniferum*, which had grown so luxuriantly as to shade and injure the other plants.

3. *List of plants growing in the case.*—Most of the following were planted in May 1838, and none less than nine months ago. The remarks are by Mr. M'Nab, and apply to the time of examination in May 1839.

BOTANICAL NAMES.	CONTINENT.	COUNTRY.	REMARKS.
Chamærops humilis	Europe	Italy, Sicily, Spain	Increased $\frac{1}{4}$ its original size.
Gentiana verna	Europe	England	Flowered, but no difference in size.
Adiantum capillus Veneris	Europe	England	Increased $\frac{1}{8}$.
Primula farinosa	Europe	Scotland	Flowered; atmosphere rather damp for it.
„ scotica	Europe	Scotland	Flowered; atmosphere rather damp for it.
Verbascum Myconi	Europe	Scotland	Increased $\frac{1}{8}$.
Androsace villosa	Europe	Scotland	Flowered; not very healthy.
Chamærops Palmetto	N. America	Carolina	Increased $\frac{1}{3}$.
Dionæa Muscipula	N. America	Carolina	Made $\frac{1}{8}$.
Sarracenia purpurea	N. America	Carolina	Increased 4 times its original size.
Epigæa repens	N. America	Carolina	Increased $\frac{1}{2}$.

BOTANICAL NAMES.	CONTINENT.	COUNTRY.	REMARKS.
Testudinaria elephántipes	Africa	Cape of Good Hope	Made a shoot 10 in. long.
Aloë retusa	Africa	Cape of Good Hope	Made $\frac{1}{3}$, showing flower-spikes.
Rhododendron chrysanthemum	Asia	Siberia	Increased $\frac{1}{2}$.
,, Chamæcistus	Europe	Austria	Increased $\frac{1}{3}$.
Cycas revoluta	Asia	China	Increased $\frac{1}{8}$.
Nepenthes distillatoria	Asia	Ceylon	Increased $\frac{2}{3}$.
Cypripedium venustum	Asia	Nepal	Increased $\frac{1}{5}$.
,, insigne	Asia	Nepal	Increased $\frac{1}{4}$.
Agave geminiflora	S. America	Mexico	Increased $\frac{1}{3}$.
* Goódyera discolor	S. America	Mexico	No perceptible difference.
* Echinocactus multiplex	S. America	Mexico	Increased $\frac{1}{2}$.
,, * peruviana	S. America	Mexico	Increased $\frac{1}{2}$.
,, myriacantha	S. America	Mexico	Increased $\frac{1}{2}$.
,, * formosa	S. America	Mexico	Increased $\frac{1}{3}$.
,, Ottoni	S. America	Mexico	Increased $\frac{1}{4}$.
,, candida	S. America	Mexico	Increased $\frac{1}{2}$.
Epiphyllum truncatum	S. America	Brazil	Increased $\frac{2}{3}$.
Cereus flagelliformis	S. America	Peru	Increased $\frac{1}{2}$.
Lycopodium stoloniferum	S. America	Cuba	Very luxuriant.

Those marked thus * are growing in fancy pots, and suspended from the roof of the plant case.

4. *Incident which suggested the invention of the case; with remarks on the mode in which a smoky atmosphere proves injurious to vegetation.* —Having thus described the apparatus in which the plants were confined, the soil in which they have been grown, and the progress they have made under the peculiar conditions in which they have been subjected to the combined action of the several agents concerned in promoting vegetation, it is proposed next to consider how plants naturally inhabiting such different climes, and possessing such different characters, should be able, not only thus to live together, but to flourish in circumstances foreign, in many respects, to the native habits of all. Perhaps the best mode of dealing with this question will be to compare briefly the conditions to which they are submitted in these close cases, with those to which they are naturally exposed in the free atmosphere.

Before entering on this investigation, it may not, however, be out of place to advert to the origin of the invention which has just been described. From his early youth, Mr. Ward had been attached to botanical pursuits; but, living in a situation enveloped in the smoke of numerous manufactories, he had been compelled to give up the cultivation of plants, after many unavailing trials. At length a simple incident put him on new experiments, and led him gradually to the results we are about to detail. He had buried the chrysalis of a sphinx in some moist mould, which was contained in a wide-mouthed glass bottle, covered with a lid. In watching the bottle from day to day, he observed that the moisture which, during the heat of the day, rose from the mould, became condensed on the inner surface of the glass, and again fell back to the mould, so as to keep it always in a state equally moist. About a week

prior to the final change of the insect, a seedling fern and grass appeared on the surface of the mould. After having secured the insect, Mr. Ward set himself to watch the development of these plants in such a confined situation. He placed the bottle on the outside of the window of his study, where the plants continued to grow, and turned out to be the *Poa annua*, and *Nephrodium Filix-mas*. From this incident, so well improved by Mr. Ward, have arisen the results, both physiological and practical, which form the subject of the present communication. These results were published in the Companion to the Botanical Magazine, edited by Sir W. J. Hooker, in May 1836; but the incident which gave rise to them, and the experiments to which it led, occurred seven or eight years before,—that is, about eleven years from the present time (1839).

His previous want of success in growing plants in the ordinary mode, Mr. Ward attributes to the "depressing influence of the fuliginous matter with which the atmosphere in which he lives is impregnated." The real mode, however, in which such an atmosphere proves injurious to vegetation, was first shown by the experiments of Doctors Turner and Christison, which were published in the ninety-third number of the Edinburgh Medical and Surgical Journal. They ascertained that it is not simply to the diffusion of fuliginous matter through the air, but to the presence of sulphurous acid gas, generated in the combustion of coal, that the mischief is to be ascribed. When added to common air, in the proportion of $\frac{1}{9000}$ or $\frac{1}{10000}$ part, that gas sensibly affected the leaves of growing plants in ten or twelve hours, and killed them in forty-eight hours or less. The effects of hydrochloric, or muriatic, acid gas were still more powerful, it being found that the tenth part of a cubic inch, in 20,000 volumes of air, manifested its action in a few hours, and entirely destroyed the plant in two days. Both these gases acted on the leaves, affecting more or less their colour, and withering and crisping their texture, so that a gentle touch caused their separation from the footstalk; and both exerted this injurious operation, when present in such minute proportions as to be wholly inappreciable by the animal senses.

After having suffered much injury from these acid gases, the plants, if removed in time, will recover, but with the loss of their leaves. Hence in vegetation carried on in a smoky atmosphere, the plants are rarely killed altogether, but merely blighted for the season. Accordingly, in spring, vegetation recommences with its accustomed luxuriance; and as in many situations there is at that season, and through the summer, a considerable diminution in the number of coal-fires, there will be a proportionate decrease in the production of sulphurous acid gas; and, consequently, less injury will be done to plants during that season. In winter, too,

when coal-fires mostly abound, and gas is most abundantly generated, deciduous plants are protected from its noxious operation by suspension of their vegetating powers; but the leaves of evergreens, which continue to grow through that season, are constantly exposed to its action when present in its greatest intensity. Accordingly, in many of the suburban districts around London, especially in the course of the river, where new manufactories are constantly rising up, the atmosphere is so highly charged with noxious matters, that many deciduous plants, and almost all evergreens, cease to flourish, or exhibit only a sickly vegetation.

In an interesting biographical sketch of his late lamented friend Dr. Turner, Professor Christison confirms, by subsequent experience, the opinion formerly given respecting the noxious operation of the sulphurous and muriatic gases on plants; he describes their action as so energetic, that in the course of two days the whole vegetation of various species of plants may be destroyed by quantities so minute as to be altogether inappreciable by the senses. On two occasions he was able to trace the identical effects of the same kind of works (the black-ash manufactory) on the great scale, which his friend and himself witnessed in their researches. In one instance, the devastation committed was enormous, vegetation being for the most part miserably stunted, or blasted altogether, to a distance of fully a third of a mile from the works, in the prevailing direction of the wind. Against the evils arising from such a vitiated atmosphere, the plan of Mr. Ward provides effectual protection, as the success of his own establishment amply demonstrates.

5. *Condition of plants, in regard to water, in close cases, and in the free atmosphere.*—In considering the conditions essential to vegetation, water may be allowed to claim the first place; for if the vegetable exists in a state perfectly dry, neither the seed nor the plant can exert that action on the air which is essential for its development and growth. It is "owing, therefore, to the prevention of the escape of the moisture within the cases, (as Mr. Ward observes) that plants will grow in them for many months, or even years, without requiring fresh supplies of water: thus, the Poa and Nephrodium, above mentioned, grew for four years in the bottle without receiving one drop of fresh water, and would, (as he believes) have grown as many more had they not perished from an accident." In vegetation in the free atmosphere, the fluids, which may be absorbed either from the soil by the roots, or from the atmosphere by the leaves, are, in great part, exhaled and dissipated; but in the plant-cases they are condensed on the inner surface of the glass roof, and fall back to the soil from which they were raised. In this way, both the soil and atmosphere possess always sufficient humidity to carry on vegetation.

The degree of humidity which is thus maintained is not, however, suited to all plants. Those which partake largely of a cellular structure, and possess a succulent character, and especially those which have fleshy leaves, bear best the atmosphere generally existing in these cases; whilst, on the contrary, its continued humidity is unfavourable, says Mr. Ward, to the development of the flowers of most exogenous plants, except such as naturally grow in moist and shady situations. If, indeed, we call to mind the vast quantity of moisture which many plants naturally exhale in the free atmosphere, and the check which their vegetation receives if the atmosphere continue for some time both humid and still, we cannot wonder that to such plants the moist air of these cases should be unsuited, and that many of them, placed in such circumstances, should, as it is said, "damp off." But others of a different character, whether growing in the soil or suspended from the roof, find always sufficient moisture to support a healthy vegetation. Hence the supply of water given to the soil in the first instance, being secured from waste, is successively absorbed, exhaled, and condensed within the case itself, and made to sustain over and over again the vegetation of the same plants, without suffering either the soil or the atmosphere to become at any time too dry to carry on that process.

6. *Condition of plants, in regard to heat, in close cases, and in the free atmosphere.*—The condition next to be noticed is that which relates to temperature. In the list of plants growing together in these cases, are some which are natives of the tropics, others which have been brought from high latitudes, and others the growth of our own temperate clime. Now the varying effects of climate are well known so far to modify the characters and habits of plants, as to bestow on each region its peculiar and appropriate vegetation. Even in the same latitudes, climate is so changed by elevation above the sea, as to blend the vegetation of the tropical with that of the arctic regions; the same mountain which enjoys a tropical climate at its base being found clothed, at different elevations above the sea, with the vegetation of every other clime; the plants finding, in the different altitudes at which they grow, a climate that compensates, more or less completely, for the difference of latitude. It is a great merit in the plan of Mr. Ward, that it breaks down in a great measure these distinctions of climate, and the peculiarities to which they give rise, and enables us not only to grow together in the same soil and climate plants which naturally inhabited countries the most distant from each other, and flourished only in the most opposite climes, but to pass them from one extreme of climate to another, through all the intermediate gradations, with very little trouble, and without exposing them to any great risk. Thus,

in the month of June 1833, Mr. Ward filled two cases with ferns, mosses, and grasses, and sent them out to Sidney, where they arrived in January 1834. They were there taken out in good condition, and the cases refilled with plants of that country in the following month, the thermometer at the time ranging between ninety and one hundred degrees Fahr. In the passage to England, the temperature varied greatly, falling to twenty degrees in rounding Cape Horn, and rising to one hundred and twenty degrees in crossing the line. On arriving in the British Channel in November, the temperature was again down to forty degrees. During the whole voyage of eight months, the plants in these cases received no protection either by day or by night; neither were they once watered through the whole period, and yet were taken out at London in the most healthy and vigorous condition. Other cases, filled with plants of a higher order, have been sent to Alexandria, and thence forwarded to Cairo, where, after a two months' voyage, they have been taken out of the cases in a perfectly fresh and vigorous state. Exchanges of plants have been made by means of these cases, between the professor of botany in this university and botanists in the island of Cuba; and the great establishment of the Messrs. Loddiges, at Hackney, is said to have sent out or received not fewer than two hundred cases filled with plants, and generally with complete success.

In the opinion of Mr. Ward, it is owing to the "quiet state of the atmosphere surrounding the plants enclosed in these cases, that they are enabled to bear the extremes of heat and cold to which they are exposed in these long voyages." In proof of the former position, he refers to the well-known experiments of Fordyce and Blagden, who were able to remain for a short time in a close room raised to the temperature of 212°, or even 260°, Fahr.; and in support of the latter, he appeals to the experience of Mr. King, who accompanied Captain Back in his late expedition to the arctic regions. That officer states that a difference of 70° or 80°, either from cold to heat, or from heat to cold, did not suspend his usual avocations in the open atmosphere when the air was perfectly still; but, though the temperature might be 40° higher, if it was accompanied with a stiff breeze, he did not stir from home. In like manner, Sir Edward Parry found that a degree of cold sufficient to freeze mercury could be more easily borne when the air was perfectly calm, than when, with a stiff breeze, the temperature was 50° higher. "When the cold was $40\frac{1}{2}$° below freezing on the Fahr. scale," says Mr. Laing, in his late Tour in Sweden, "it was quite practicable to prosecute the great cod-fishing in open boats in the Lafoden Isles, within the arctic circle. The calmness of the air which accompanies this extreme cold is a kind of

natural safeguard against its severity, the abstraction of heat from our bodies being then much less rapid. Such a hard winter," he adds, "is considered here a blessing next to a good crop; for the fisherman then gets out to sea, the landsman gets in his timber out of the depths of the forest, and the inhabitants of the most pathless districts obtain their supplies of grain, potatoes, &c., at little cost of transport." (*Tour in Sweden*, p. 364.)

The powerful and rapid operation of wind in lowering temperature was shown in an experiment of Dr. Heberden, recorded in the Philosophical Transactions for 1826. He suspended a thermometer, previously raised to 100° Fahr., in an atmosphere at 31°, when a strong breeze prevailed, and in about half a minute the mercury fell not less than 48°; whilst in an atmosphere at 30°, but without any perceptible wind, the fall of the mercury previously raised as before to 100°, was only 19° in the same period of time. These facts, which doubtless apply to vegetable as well as to other bodies, due regard being had to differences in their conducting powers, show that degrees of cold may be borne with impunity in an atmosphere that is perfectly still; which if accompanied with a brisk wind, would be quite intolerable. That such stillness prevails in the plant-cases there can be little reason to doubt; for though considerable motion may often occur in the air within them, from variations in the external heat, yet, as little or none of this air escapes, its temperature, at any given period, must be deemed pretty uniform, and cannot be rapidly reduced as it is by the frequent contacts and changes of surface which go on in the free motions of an agitated atmosphere. In an atmosphere, too, which is so still, and in which changes of temperature proceed so slowly, tropical plants may, perhaps, bear, without injury, degrees of cold which would prove fatal if occasioned by the frigorific operation of free air in constant and rapid motion.

7. *Condition of plants, with regard to light, in close cases and in the free atmosphere.*—Of the great importance of light to vegetation Mr. Ward is fully sensible. "The success of his plan," he says, "will be in proportion to the admission of light to all parts of the growing plants. In every place," he adds, "where there is light, even in the centre of the most crowded and smoky cities, plants of almost every family may be grown by this method." Seeds, it is well known, germinate best when buried in the soil, and entirely secluded from light; but when the young germ pushes into day, if light be still excluded, by inverting over it an opaque vessel, the plant shoots up into a long and feeble stem, is of a pale or whitish yellow colour, and possesses little odour or savour. On the contrary, if the vessel be transparent, so as to transmit light, the growth is more

vigorous, the young plant puts forth buds from its stem, and soon exhibits its characteristic form and colour.

These differences in form and colour, according as plants are grown in light or in darkness, were early noticed by Ray, and afterwards by M. Bonnet, in his Recherches sur l'Usage des Feuilles, p. 210. In the year 1771, Dr. Irvine described still more minutely the influence which light exerts on vegetation. "Plants," says he, "though furnished with water, heat, and air, grow imperfectly if placed in a dark box, and never contain anything but a watery juice; hence the rays of light are in some way necessary to the perfect growth of vegetables; since, when deprived of this influence, they all agree in the nature and qualities of the juices they contain; nor have they that variety in colour and flavour which they had before. The most pungent vegetables become insipid, the highest-scented inodorous, and the most variegated in colour of a uniform whiteness, when secluded from light. Vegetables, too, which grow in a natural situation, readily burn when dry; but a vegetable reared in a dark box contains nothing inflammable." (*Essays on Chemical Subjects*, p. 430.) In regard to colour and smell, similar observations were made by Professor Robison on Tansy (*Tanacetum vulgare*) and other plants, which, when grown in darkness, were white, and afforded no aromatic smell, but when brought into daylight, the white foliage died down, and the stocks then produced the proper plants in their usual dress, and having all their distinguishing smells. (*Black's Chemical Lectures*, by Robison, vol. i. p. 532.)

The great influence which light thus exerts on the colour and properties of plants must be regarded as altogether local in its operation, affecting only those parts to which it has free access; and, accordingly, the green colour, and other properties to which light gives rise, may be again obliterated by the simple exclusion of that powerful agent. "Thus, if a portion of a growing fruit," says M. Senebier, "be covered with a piece of tinfoil, the uncovered portion may become perfectly red, whilst the covered part exhibits only a pale or yellowish hue; or grapes, which would have acquired a violet colour under a full exposure to light, take on a greyish hue if inclosed in black paper. Those leaves, too, which may only partially cover growing fruit, and thereby intercept the sun's rays, delineate, as it were, on the fruit beneath, the limits they set to its action. (*Mém. Phys. Chimiques*, tom. iii. p. 146.) In this manner, apples or other fruits may be marked with the impressions of leaves artificially glued on them; and fruits so marked, it is said, are often exposed for sale in the bazaars of Persia. In North America, the operation of light in colouring the leaves of plants is sometimes exhibited on a great scale, and

in a very striking manner. Over the vast forests of that country, clouds sometimes spread and continue for many days, so as almost entirely to intercept the light of the sun. In one instance, just about the period of vernation, the sun had not shone for twenty days, during which time the leaves of the trees had reached nearly their full size, but were of a pale or whitish colour. One forenoon the sun broke forth in full brightness; and the colour of the leaves changed so fast, that by the middle of the afternoon the whole forest for many miles in length exhibited its usual summer dress. Of this local action of light the gardener avails himself on many occasions; and by various modes of excluding this agent from particular parts of plants, so as to effect their etiolation, he is enabled so far to modify or change, not only their colour, but their more active properties, as in some instances to improve their natural qualities as articles of food, and in others to deprive them of those which might render them unsavoury or unwholesome.

The progress of colouration in an etiolated leaf, when exposed to sunshine, was observed by Senebier. The most tender parts first pass from white to yellow, the yellow then becomes deeper; next, some green spots appear on different parts, which multiply, extend, and meet, till the whole exhibits a green colour. This progressive colouration is effected exteriorly by the action of light, and is independent of the internal vegetation of the organ. (*Mém. Phys. Chim.* tom. ii. p. 88.) The time required for producing the effect will vary with the degree of light, and the age, texture, and peculiarities of the plant. The leaves of French beans, which sprang white out of the earth, were observed by Senebier to become green in an hour under exposure to an ardent sun; and when etiolated leaves were immersed in water, they became green under exposure to sunshine, in the same way as in the free atmosphere. (*Ibid.* p. 78—91.)

The matter thus acted on by light is contained in the cells of the parenchyma; it is green in the leaves, but of different colours in other organs of the plant: it is in its nature resinous, and soluble in alcohol. By De Candolle, it has been named chromule, from the Greek word signifying colour. It is the cause of colour in all vegetable surfaces, is common to other parts as well as to the leaves, and exhibits different colours in the leaves at different periods of the year. (*Physiologie Végétale*, t. i. p. 321.) In addition to this chromule, there is another matter in the leaves and flowers, which, when extracted by water, exhibits a red colour on the addition of acids, and a yellow or green one on the addition of alkalies. This matter, or "colourable principle," has been named chromogen by Dr. Hope, the distinguished professor of chemistry in this university, in a memoir on the "Coloured and Colourable Matters in the Leaves and Flowers

of Plants," read to the Royal Society of Edinburgh in 1837. From numerous experiments made on various leaves and flowers, Dr. Hope was led to the conclusion, that chromogen, or the "colourable principle," is not an individual substance, as hitherto supposed; but that there are two distinct principles, one, which forms the red compound with acids, which he names erythrogen; and another, which affords a yellow compound with alkalies, which he calls xanthogen. These principles exist sometimes separately and sometimes together in different plants, or in different parts of the same plant. All green leaves, all white and all yellow flowers, and white fruits, contain xanthogen alone; whilst in red and blue flowers, and in the leaves of a few plants which exhibit the former of these tints, these two principles occur together. In ten flowers possessing an orange chromule, and in the corolla of twenty purple flowers, both colourable principles were also found. Other parts of flowers, as the calyx, bracteæ, &c. comported themselves as the corresponding coloured chromules of the flowers do. Litmus presented the solitary example of a substance abounding largely in erythrogen, but containing no xanthogen. Light, adds Dr. Hope, was indispensable for the production of the green chromule of leaves, but not for the formation of some of the finest tints of flowers and fruits, if essential for any: differences connected, probably, with the fact, that the formation of the green colour in leaves is always accompanied, or rather preceded, by the evolution of oxygen gas; whilst under every degree of light, flowers always deteriorate the air.

As the solar light consists of rays possessing very different powers, M. Senebier endeavoured to discover to which species of rays the colouration of the leaves of plants was to be specially ascribed. Scheele had remarked that the violet rays of the prismatic spectrum acted soonest in blackening muriate or silver; a fact confirmed by the experiments of Senebier, who extended the same views to the action of light in the colouration of plants. He caused young colourless plants to grow in different glass vessels, so constructed that the light which fell upon them should first pass through fluids of different colours, red, yellow, and violet. At the end of four or five weeks, the leaves which had been exposed to red light had a tinge of green; those in the yellow light were at first green, but afterwards became yellow; and those in violet light were quite green, and the depth of colour increased with their age. (*Mém. Phys.* tom. ii. p. 55, *et seq.*) The subsequent experiments of Ritter and Wollaston have shown that these effects were produced, not by the coloured rays, but by certain invisible rays associated with them, and which exist in greatest force at and beyond the boundary of the violet extremity of the spectrum. To these rays have been assigned the names of the chemical or deoxidating

rays; of their deoxidating power we shall have abundant evidence in the next section.

8. *Condition of plants, with regard to air, in close cases and in the free atmosphere.*—In the last place, we have to treat of the state or condition of the air which contributes to the support of vegetation in these plant-cases. Mr. Ward appears to think that the air suffers no other change than that of "expansion by heat. With every change of temperature, a corresponding change," says he, "takes place in the volume of air; and without such variation the plants would soon perish." Besides a change of volume in the way above mentioned, it is, however, certain that the air in these cases must also undergo a change of composition, which gradually impairs, and would ultimately destroy, its power of supporting vegetation. Unless, therefore, fresh air be supplied to replace that which may have been injured by the vegetative process, or means be found of restoring the deteriorated portion to its former purity, vegetation cannot long continue. Though the cases in which the plants are confined may not be perfectly air-tight, yet they are made so close as to prevent that amount of change in the air which is required for healthy vegetation; and we must, therefore, seek for other means by which a wholesome state of the atmosphere may be maintained. As the mode in which this object is accomplished is somewhat perplexing, and opinions concerning it are much at variance, we may, perhaps, be excused for going a little farther into detail on this point than we should otherwise have done.

The experiments of various chemists, from Scheele down to De Saussure, have shown that seeds do not germinate without receiving continual supplies of fresh air, and that in the progress of their evolution they convert the oxygen gas of such air into an equal volume of carbonic acid gas. As plants spring from seeds, it was natural to expect that to carry on their progressive development they would also require fresh air, and would in like manner convert its oxygen into carbonic acid gas. Both these facts were proved by Dr. Ingenhousz in his *Expériences sur les Végétaux*, t. ii. p. 35-37; by M. Senebier, in his *Physiologie Végétale*, t. iii. p. 113; and by Theodore de Saussure, in the *Annales de Chimie*, t. xxiv. p. 139. M. Senebier farther maintained that the air thus employed in vegetation, lost precisely the quantity of oxygen gas necessary to the formation of the carbonic acid gas produced, a result confirmed by the experiments of De Saussure and by those of other writers; so that in the progressive stages of development and growth, plants, like the seeds from which they sprang, not only require a pure air, but convert a portion of its oxygen into an equal volume of carbonic acid gas.

(*To be continued.*)

REVIEWS.

In Paxton's Magazine of Botany for June, are the following plants:—

Dendrobium macrophyllum. A very beautiful orchideous plant, with a long pendulous stem; introduced from Manilla in 1838. It is a most abundant flowerer, and a very valuable plant.

Helichrysum niveum, Grah. A very beautiful shrubby kind of *Helichrysum.* I saw it in full flower in September, in the hothouse of the Caledonian Horticultural Society, Edinburgh.

Stachys coccinea. This very beautiful plant was first supposed to require a greenhouse; but I saw it in June last in the Liverpool garden, in the open ground, apparently quite hardy.

Mirbelia floribunda. This beautiful plant has purple flowers. It is a native of New Holland, and is very nearly hardy, though it flowers best in a greenhouse.

FLORAL CALENDAR.

October is the month for taking up Dahlias, &c., and protecting the tender plants which are to remain in the open air all winter. The succulent plants and bulbs should now have their season of rest by withholding water, or by taking them up. This is also the season for planting truncheons of mulberries, and for transplanting trees and shrubs.

1. *Mimulus atro-roseus* — 2. *Mimulus insignis*.
3. *Mimulus pallidus*.

MIMULUS CARDINALIS, *var.* ATRO-ROSEUS, INSIGNIS, AND PALLIDUS, *Dougl.* THE SCARLET MONKEY-FLOWER.

Mimulus, *Lin.* *Nat. Ord.* Scrophularineæ. *Lin. Syst.* Didynamia angiospermia.

Generic Character.—Calyx tubular, angled, 5-toothed. Corolla ringent, upper lip 2-lobed, lower one trifid, usually bigibbous at the base. Segments all flat, divaricate at length, sub-confluent. Stigma bilabiate. Capsule hardly-furrowed, 2-valved, locucidal, dehiscent; valves entire, and with flat margins; dissepiment at length free, placentas adnate. Erect or procumbent plants, glabrous, or rarely villous, with usually four-sided or square stems. Leaves opposite, usually toothed, rarely quite entire. Flowers axillary, solitary, pedicellate; superior ones sometimes racemose.

Engraving.—Our Plate xi.

Specific Character.—Villous; leaves stem-clasping, ovate, with erosely-toothed margins; peduncles longer than the leaves; calyx large, inflated, tubular, hardly plicate, with ovate-acute teeth; anthers villous. *G. Don.*

Description, &c.—The genus Mimulus is well known from the numerous varieties of *M. luteus* and *M. guttatus*, which are now common in the nurseries; and *M. moschatus*, the little musk-plant. The varieties, or rather hybrids, figured in Plate XI. were all raised in the Edinburgh Botanic Garden, by Mr. James M'Nab, from seed of *M. cardinalis*, fertilised by the pollen of other species. *M. cardinalis* is a native of California, whence it was introduced in 1835 by Douglas. It is a perennial, growing from one foot to two feet high; and it produces its large scarlet flowers from June to August. *M. atro-roseus*, *fig.* 1, in Plate XI. was raised from seed of *M. cardinalis*, fecundated with the pollen of *M. roseus*, a Californian species, with small, deep rose-coloured flowers. The hybrid thus produced is a most beautiful plant, of a low, compact habit of growth, and producing abundance of rich, dark crimson flowers, as large as those of *M. cardinalis*, but much richer in colour. *M. insignis* is another hybrid raised from the same parents, but with the flowers of a dark scarlet instead of crimson. *M. pallidus* is a hybrid between *M. cardinalis* and *M. luteus*.

All these hybrids are quite hardy, and will flower equally well in the open border, or in a greenhouse; the plants being larger in the former case, and more compact in the latter. To make them compact, the extreme points of the shoots should be frequently taken off; and this will make them throw out branches from the sides. Nothing can be prettier than plants of *M. atro-roseus* thus treated; and as I saw them last August, at the villa of R. Gracie, Esq., Olive Bank, Musselburgh, near Edinburgh.

THE EDITOR'S TOUR*.

August 5.—*Dalkeith to Edinburgh.*—*Dalhousie Castle* is a fine, modern, castellated building, with most beautiful walks on the rocky banks of the Esk. On leaving the castle, we first traversed a fine terrace, which led us under a stone bridge to the kitchen-garden. The road from the bridge to the garden was very beautiful, the walk being bordered on one side by a shrubbery, cut into bays and promontories; and on the other by a strip of lawn, with a winding row of variegated hollies, the tops of which had been shortened to make them spread out horizontally below. The hothouses were built by the late Mr. Hay, and were in his style, with a kind of architectural trellis-work projecting, or rather hanging down, into the house. The kitchen-garden was in the usual Scotch style, half full of flowers; and in front of the hothouse were some groups of Rhododendrons and Azaleas, with a fine plant of Viburnum lantanoides. There were also several very fine American thorns and Acers in the shrubberies, which were sent home by the late Earl of Dalhousie, when he was governor of Canada. There are also some American oaks, and a fine specimen of Pinus Banksiana, fourteen feet high. The late earl, and his lady, who was an excellent botanist, were both very fond of this place; and the whole of the pleasure-ground bears evident marks of their taste in laying it out. The walks cut in the solid rock, and the rustic bridges across the river, leave nothing to be desired as far as regards their formation. In the kitchen-garden the wall-trees had suffered greatly from frost, for want of a movable wooden coping. We found copings of this kind resting on holdfasts in several of the gardens we visited; and wherever a coping had been used to protect the early-flowering fruit-trees while in blossom, the crop was excellent; while the reverse was the case where the blossom had been exposed without protection to the effect of perpendicular frost. When the fruit has set, and all danger from spring frost is over, it is better to remove the coping, in order to give the plants the full advantage of the perpendicular sun and rain. We saw in this garden numerous specimens of *Heracleum giganticum*, or *asperum*, the Siberian Cow-parsnip, from ten to twelve feet high, with enormous root-leaves, frequently forming a circle twelve feet in diameter. The silver firs at this place, as in many other situations in Scotland, had been attacked by the mealy bug, and in many instances killed. This destructive insect generally makes its appearance when the trees are about thirty or forty feet high; and it is only found in close plantations, where thinning has

* Continued from p. 293.

been neglected, and where the trees are consequently deprived of the full advantage of the sun and air. We found here American Rhododendrons and Azaleas growing in loamy soil; and we were told by the gardener, a very intelligent man, that when imported they were sent over in yellow loam.

In the villa gardens between Dalhousie and Edinburgh we found many specimens of the balsam poplar, always in a thriving state; while the Lombardy poplars, throughout the whole district we had been traversing, appeared in a dying state.

August 6.—*Edinburgh to Kinross.*—The road from Edinburgh to the Queen's-ferry is lined with villas, but we deferred visiting them till our return from Stirling; we therefore proceeded direct to the ferry, which we crossed in a steam-boat, and pursued our way through a romantic country commanding beautiful views.

Blair-Adam was the first seat we visited after crossing the Forth, and we approached it through a most romantic dell, completely shaded with large trees, principally spruce and silver firs, Scotch pines and larches, some with straight trunks, from fifty to seventy feet high, and others bent into the most fantastic shapes. The house is a kind of cottage, beautifully situated, and the kitchen-garden was literally a blaze of beauty. Large beds of *Gladiolus cardinalis* presented masses of colour of the most dazzling brilliancy. In a space about twelve feet by seven feet there were no less than five hundred spikes of flowers; and the other beds were all flowering with the same profusion. The plants are growing with extraordinary luxuriance, and the great secret of their culture appears to be to leave them to themselves. Mr. A. Mackenzie, the gardener, who is an exceedingly intelligent man, told us that when he wishes to form a new bed, he takes up a ball or cluster of the bulbs or corms, from one foot to two feet in circumference, and places it in a bed about two feet wide, putting a little sand under and between the bulbs, which are slightly loosened, but not separated from each other, and planting them two or three inches deep. When the bed is long, two or more clusters may be planted, a clear space of a foot wide being left between each cluster. The first two winters the bed is covered with a layer of dead leaves, about two inches thick; but as soon as the bulbs have spread and taken firm hold of the soil, they are left without any protection whatever, and they flower splendidly every year. A bed planted with the bulbs separated from each other, and put into the ground singly, only produced two flowers; while the other beds, which were planted with the bulbs in clusters, are covered with bloom. The Hon. and Rev. Wm. Herbert, whose skill in the management of bulbs is so well known, grows all the kinds of Gladi-

olus in the same way; and it thus appears evident that the common practice of taking up the bulbs every year and replanting them singly, is a very bad one. The only difficulty in the new mode of culture is to find a bed of well-established plants, from which the cluster of bulbs can be taken; but probably the same effect would be produced by growing two or three bulbs together in a pot, and then when the roots had grown together so as to form a mass, turning the ball of earth unbroken out of the pot into the bed prepared to receive it.

The espalier posts in the kitchen-garden at Blair-Adam were let into blocks of stone, bored and sunk into the ground; and thus the espalier railing was neater and looked better than in any other place I have seen in Scotland. There was, however, a bad crop of apples and pears, as is generally the case in Scotland, from the almost universal practice of cropping the borders.

Loch Leven Castle.—We had no sooner arrived at Kinross than we hired a boatman to take us across the lake to the castle. The evening was beautiful, and the appearance of the lake, as our little boat glided over its smooth surface, was as fine as can be imagined. The castle itself is a very interesting ruin; but the agent of its present proprietor is doing all he can to spoil it. The ground round the castle has been trenched and planted with trees, which, if they grow, will in a few years hide the castle; and the lake has been lowered several feet, so that the window from which Queen Mary descended into the boat is now separated from the water by a tolerably broad strip of land. In the centre of the castle there are two or three onion-beds, and the rest of the ground is covered with strong rampant weeds, so as to be unpleasant, and even dangerous to walk on. How different from Melrose, with its level surface and smooth velvet turf! The only tree now standing on the island, except the young ones lately planted, is a thorn, said to have been planted by Queen Mary, which is about twenty-five feet high, and eighteen inches in diameter, but which is now in a state of rapid decay.

Kinross House, the seat of the proprietor of the castle, is seated on the mainland, on a promontory jutting out into the lake. It is a plain house, built in 1685, and constructed with the strictest regard to symmetry, every part having a corresponding part on the other side. This exactness does not, however, produce a good effect; as when the house is seen from one side the parts look displaced, and it is only when seen directly in front that its exact symmetry is discernible. There are straight avenues leading to this house in different directions through a fine wood, and two platforms on the lawn front. The garden is very much neglected, as the house has been long uninhabited.

August 7.—*Kinross to Kincardine.*—From Kinross we proceeded to the Rumbling Bridge, a very singular waterfall, in which the waters of the river Devon are precipitated from one stony cauldron to another, so as to produce a strange rumbling noise. On the banks of the stream is a villa residence, called Blair-hill, and from the grounds of this villa the finest view of the cascade is obtained. The garden of the villa is principally remarkable for the garden wall, which is 1300 feet in extent. Among the flowers in the garden we saw, what I had never seen before; viz. a double *Nemophila atomaria*. There were also some beautiful pure white carnations, and a *Ribes sanguineum*, covered with abundance of large fruit, which, instead of having the insipid taste the fruit of that species usually has, was slightly acid and very well flavoured. In the greenhouse were some very ingenious boxes for striking cuttings. The glass of the partition between the houses was covered with wires, placed diagonally, which at once served to protect the glass, and train plants against. In the kitchen-garden we saw some very fine potatoes, called the Solan kidney.

Castle Campbell, vulgarly known by the name of Castle Gloom, stands on the summit of a steep pyramidal hill, or mound, surrounded by a deep, narrow valley, beyond which the lofty mountains, called the Ochil hills, rise on every side. A more singular situation cannot be imagined; and even in these days of easy travelling it is almost inaccessible, from the steepness of the hill on which it stands. When we saw it a storm was just coming on, and I think I never beheld a grander or more gloomy picture. The castle is now in ruins, having fallen into the hands of the Globe Insurance Company, who do not think it worth repairing; and it has long been uninhabited.

The Dollar Institution forms a striking contrast to the castle, to which it is so close a neighbour. Many years ago, a native of Dollar, who could neither read nor write, came up to London and made a large fortune; and having no children, he bequeathed his property to his native place, to form an institution where every native of the parish may be educated free of all expense, and those of the neighbouring parishes by paying a small fee. There are masters for French, mathematics, &c., a botanic garden, &c. &c., so that the poorest inhabitant of Dollar may obtain the highest advantages of education, if he should feel inclined to devote sufficient time. The rain, which now descended in torrents, prevented me from visiting the garden of Dr. Walker, near Dollar, but Mr. Loudon went into it, and he was much pleased with some beds of *Saxifraga oppositifolia*, the little blue saxifrage, which were paved with white pebbles; some of the plants being planted on cones or pyramids of stones, and suffered to hang down.

Tullyallan.—The day cleared, and a bright gleam of sunshine burst through the clouds just as we reached this beautiful mansion; which with its noble terrace and Italian garden, contrasted with the surrounding scenery, looks like fairy-land in a wilderness. The grounds are laid out very elegantly, and the whole scene is one of great beauty.

August 8.—*Kincardine by Valleyfield to Stirling.*—The road lay by the sea-coast, and we saw a great portion of land redeemed by Lord Keith from the sea. Near the curious old town of Culross is a beautiful little cottage, or summer-house, facing a large tank for sea-fish. A walk surrounds the tank, bordered by a wall which has stone ledges for plants affixed to it, each in the shape of the segment of a circle. This singular enclosure was originally designed for salt-pans, by the Earl of Dundonald, when he was in possession of the princely mansion of Culross Abbey, so long the principal seat of his family.

Valleyfield was built and laid out by Sir Robert Preston. We entered by a very fine approach through a grove of trees, diversified by a river, with bridges and cascades. On advancing farther into the pleasure-grounds, we found a straight canal with fine terraces, an island of rhododendrons, and fine rockwork; but the whole was apparently neglected, and in great want of repair. It is a place which might be very greatly improved at a very trifling expense, especially by cutting down a few trees here and there to let in a view of the sea, which is very fine here. There are some large balsam poplars, and several black Italian poplars one hundred feet high, and three feet in diameter.

Culross Abbey was the ancient seat of the Dundonald family, but since it has fallen into the hands of Sir Robert Preston, it has never been regularly inhabited. There is a fine avenue leading to it of lime-trees planted at regular distances about sixteen paces apart, and the width between the rows one hundred and twenty feet. In front of the abbey is a fine terrace walk, terminating in alcoves at each end, of the same age as the mansion. Below this is a second terrace, and fruit wall; and below again, grassy terraces. In the grounds are five or six cedars, from fifty feet to seventy feet high, and three or four feet in diameter. There are also two sweet chestnuts which ripen fruit every year, from which young trees have been raised. The largest of these trees is five feet in diameter at four feet from the ground. The grounds are all laid out in terraces, slopes, and platforms; the principal terrace having a very fine old stair with pillars and parapets for vases. Among the trees are two Chinese arbor vitæ, twenty-five feet high. In the house are some good rooms, and one intended for a picture gallery, but there are no paintings in it.

Castle Hill, or Dunimarle, is formed on the site of Macduff's castle, of

which a very small portion remains, and the country people still commemorate the legend of the wood at Dunsinane, by walking in procession on the 24th of June, with birch boughs in their hands. The procession is said to have taken place every year for the last seven hundred years, and to be the oldest procession in Scotland. The garden wall at this place is built with battlements, like the boundary wall of a tower. A terrace walk is now forming in the garden inclosed by this wall, with Irish yews planted at regular distances on both sides. The greenhouse is remarkable for having the sides of brick instead of glass, in order to conceal the gardener when at work. On a sloping bank, near the remains of the old castle, are some pear-trees which are said to be three hundred years old; and near the wall is a tower sixty feet high, from which it is said North Berwick Law and Stirling Castle can both be seen.

After we left Dunimarle we proceeded by a fine road, with splendid and varying prospects of the Ochil hills, past Clackmannan tower, and the walls of Lord Mar's park, to Alva, the seat of —— Johnston, Esq. Nothing can be more beautiful than the woods of this extensive domain, situated as they are on the side of the Ochil hills, and commanding a splendid view of Stirling Castle and the windings of the Forth. These beautiful woods are intersected with numerous broad dry walks, in which, by the kindness of Mr. Johnston, the inhabitants of the neighbouring town are permitted to walk at pleasure.

August 8.—*Stirling to Airthrie Castle, Deanston, and Blair-Drummond.* —We had passed Airthrie Castle on the road from Alloa to Stirling, but it was too dark to visit it; and after sleeping at the Royal Hotel, Stirling, an excellent inn, we proceeded to it. The approach was very fine, from the admirable effect of the water, which was introduced with great skill, and the fine old trees with which it was bounded. The kitchen-garden was perfect as regarded neatness, and the fine quality of the fruit. The whole place was indeed in admirable order. In the flower-garden *Maurandya Barclayana* and other ornamental climbers were trained over fir-trees stripped of their bark, and looked remarkably well. The ruined kirk of Loggie produced a very good effect when seen from the garden; and adjoining it was a cottage, the sole remains of what was once the village of Loggie. This place was the property of the old woman, Ellen Smith, who inhabited it, and she, like her dwelling, was the last of her race. She had lived there with three brothers and one sister, all unmarried; but they had all died, and she was now left alone. One brother, who had survived the others, had been a hedger, and very ingenious in turnery; and Ellen, who is strongly gifted with the organ of order, preserves his work-shop with admirable care. Every tool is clean

and bright, and hung in its proper place. The articles in the cottage are in the same order, and I was particularly amused by a pincushion fastened against the wall to receive every stray pin. This poor woman was a striking lesson to the discontented. She said she had all she could wish for, as she knew she would have a comfortable home as long as she lived, and she could see from her own door the stone where she should lie when she was dead. The walks on the Ochil hills were very fine.

Keir was the next place we visited, and here we found a handsome lawn in front of the greenhouse, planted with clipped trees in the old style. At this place the dinner-bell is suspended in a large tree. On the road we passed through the watering-place called the Bridge of Allan, which is evidently in a thriving state, from the number of new houses now in progress. Deanston, the residence of Mr. Smith, the inventor of the subsoil plough, was the next place we visited; but as we were there during a violent thunder-storm, I did not see the grounds. Blair Drummond also I only saw by driving through the park, which is crowded with wood. I was much pleased with a tree-guard, of laths wired together, which I had often before heard of, but had not before seen applied.

August 9.—*Stirling.*—The first place usually visited by strangers at Stirling is the Castle, and we accordingly proceeded thither. In the view from the esplanade we remarked a curious piece of ground, called the King's Knot, and which is evidently the remains of an old terraced garden, with an elevated mound in the centre. On one side of the castle rock are some fine walks, planted with trees, with two seats cut in the rock, one with the name of the constructor, and the other without any name, but bearing the date of 1817. We also saw an old bowling-green, and a very curious old garden adjoining the Guildhall at Stirling; the garden having two alcove-like seats, and a variety of fantastic figures, cut in holly and box. We then went to Messrs. Drummond's museum, with which I was exceedingly delighted. Not only were there an amazing number of agricultural and gardening implements, but a variety of other objects of great interest. One of the most ingenious of these was a model of a coal-mine, by Mr. Peter Mackenzie, of West Plean, formed by nailing some laths and boards together, so as to make a long, narrow box, divided into compartments by ledges, each division representing a stratum, and being filled with a specimen of the real earth or mineral found in a similar position in the earth. Nothing could be more easy than to construct similar boxes, wherever the strata of a district have been exposed by sinking a deep pit, cutting a railway, &c.; and by forming a collection of these models, a student might be enabled to form a clear idea of the geology of

every county in England. The position of the ledges being of course varied, to show the inclination of the strata; and a label being pasted on each ledge with the name of the earth, rock, or mineral inclosed. Models of this kind would be very useful to all scientific cultivators of the soil, as it is of great importance to know the nature of the sub-soil before applying manure. I was also much pleased with an Indian watering engine, made of wood, and costing only six or seven shillings, which appeared to throw up water as well as any of the costly brass and iron machines now in such general use.

August 10.—*Stirling to Edinburgh.*—We dismissed our carriage at Stirling, and returned to Edinburgh in a steam-boat down the Forth.

ON THE CULTURE OF ROSES.

BY THE EDITOR.

(*Continued from p.* 270.)

In my previous paper on this subject I have divided the roses of which I mean to treat into the hardy and the half-hardy, and I have already described three of the hardy kinds; viz, the common cabbage or Provence roses, the moss roses, and the French or Provins roses. I shall now proceed to the other hardy kinds; viz. the white roses, the damask roses, the Scotch roses, the sweet-briar, the yellow roses, and the climbing roses.

The common white rose (*Rosa alba*), has been cultivated in British gardens above three hundred years. It is frequently found semi-double, growing without any culture, and apparently half wild. Many varieties and hybrids have been raised from it, some of which are of a delicate blush colour, and some decidedly pink. They all, however, preserve the glaucous, mealy foliage of the original species, by which they can always be distinguished at first sight. One of the finest of these roses is called Blanche Superbe, or Blanche de Belgique, and it has very large double flowers of the purest white. Fatima has its flowers tinged with pink in the centre. Princesse de Lamballe, Queen of Denmark, and Zoraime, are fine pure white roses; and Viridis is curious in its flowers, appearing green till they are fully expanded. All the roses of this division make good standards; they flower abundantly, and require to have their strong shoots cut down to six or eight buds, and the weak ones to two or three buds. This pruning should not be delayed longer than the first or second week in November, if performed in winter; or the first week in May, if postponed till spring.

The Damask, or Perpetual roses, form another division, the type of which is said to have been brought from Syria so early as 1573. "The branches of the Damask roses," Mr. Rivers tells us, "are green, long and diffuse in their growth; the leaves are pubescent and placed far asunder; and the prickles on most of the varieties are abundant." The roses are round and cup-shaped, of most delightful fragrance, and generally of a most delicate tint; and they have the habit of sending forth a succession of flowers all the summer. The most common roses belonging to this division are the red and white monthly, and the rose à-quatre-saisons; and the best hybrid is the Rose du Roi, or Lee's Perpetual. The following are Mr. Rivers's directions respecting the treatment of these roses:—

"One peculiar feature they nearly all possess—a reluctance to root when layered; consequently, Perpetual roses, on their own roots, will always be scarce: when it is possible to procure them, they will be found to flourish much better on dry, poor soils, than when grafted as at present. Perpetual roses require a superabundant quantity of food: it is therefore perfectly ridiculous to plant them on dry lawns, to suffer the grass to grow close up to their stems, and not to give them a particle of manure for years. Under these circumstances, the best varieties, even the Rose du Roi, will scarcely ever give a second series of flowers. To remedy the inimical nature of dry soils to this class of roses, an annual application of manure on the surface of the soil is quite necessary. The ground must not be dry, but lightly pricked over with a fork in November; after which some manure must be laid on, about two or three inches in depth, which ought not to be disturbed, except to clean with the hoe and rake, till the following autumn. This, in some situations, in the spring months, will be unsightly: in such cases, cover with some nice green moss, as is done in the culture of hybrid China roses. I have said that this treatment is applicable to dry, poor soils; but even in good rose soils it is almost necessary; for it will give such increased vigour, and such a prolongation of the flowering season, as amply to repay the labour bestowed. If the soil is prepared, as directed, they will twice in the year require pruning; in November, when the beds are dressed, and again in the beginning of June. In the November pruning, cut off from every shoot of the preceding summer's growth about two thirds; if they are crowded, remove some of them entirely. If this autumnal pruning is attended to, there will be, early in June the following summer, a vast number of luxuriant shoots, each crowned with a cluster of buds. Now, as June roses are always abundant, a little sacrifice must be made to ensure a fine autumnal bloom; therefore, leave only half the number of

shoots to bring forth their summer flowers; the remainder shorten to about half their length. Each shortened branch will soon put forth buds, and in August and September the plants will again be covered with flowers. In cultivating Perpetual roses, the faded flowers ought immediately to be removed; for in autumn the petals do not fall off readily, but lose their colour, and remain on the plant, to the injury of the forthcoming buds. Though I have recommended Perpetual roses to be grown on their own roots, in dry soils, yet, on account of the autumnal rains dashing the dirt upon their flowers when close to the ground, wherever it is possible to make grafted roses grow, they ought to be preferred; for, on stems from one and a half to two feet in height, the flowers will not be soiled; they are also brought near to the eye, and the plant forms a neat and pretty object.

"The crimson, and indeed nearly all the Perpetuals, force admirably: for this purpose it is better to graft or bud them on the Dog-rose, as it is so easily excited. It requires also but small pot-room; as, previous to potting, its roots may be pruned to within two inches of the stem, and apparently with advantage; for, if placed in gentle heat, an abundance of fibres are immediately put forth, and the whole plant will soon have an appearance of great vigour. Those who wish for the luxury of forced roses, at a trifling cost, may have them by pursuing the following simple method:—Take a common garden frame, large or small, according to the number of roses wanted; raise it on some posts, so that the bottom edge will be about three feet from the ground at the back of the frame, and two feet in front, sloping to the south. If it is two feet deep, this will give a depth of five feet under the lights at the back of the frame, which will admit roses on little stems as well as dwarfs. Grafted plants of any of the Perpetual roses should be potted in October, in a rich compost of equal portions of rotten dung and loam, in pots about eight inches deep, and seven inches over, and plunged in the soil at bottom. The air in the frame may be heated by linings of hot dung; but care must be taken that the dung is turned over two or three times before it is used, otherwise the rank and noxious steam will kill the young and tender shoots; but the hazard of this may be avoided, by building a wall of turf, three inches thick, from the ground to the bottom edge of the frame. This will admit the heat through it, and exclude the steam. The Perpetual roses, thus made to bloom early, are really beautiful. They may also be forced in any description of forcing-house with success, by plunging the pots in old tan, or any substance that will keep their roots cool. It will at once give an idea how desirable these roses are, when it is stated that, by retarding and forcing, they may be made to bloom for eight months in the year." (*Rose Amateur's Guide*, p. 115.)

The Scotch rose (*Rosa spinosissima*), differs from the Ayrshire rose, with which it is frequently confounded, in being a bush, while the Ayrshire rose is a climber. "Scotch roses," says Mr. Rivers, "may be grown as standards, and the yellow, and one or two of the more robust varieties, make good heads, but in general they form a round and lumpish tree, in ill accordance with good taste: when grown in beds and clumps, as dwarfs, they are beautiful, and in early seasons they will bloom nearly a fortnight before the other summer roses make their appearance; this, of course, makes them desirable appendages to the flower-garden. They bear seed profusely; and raising new varieties from seed will be found a most interesting employment. To do this, all that is required is to sow the seed as soon as ripe, in October, in pots, or beds of fine earth, covering it with nearly one inch of mould; the succeeding spring they will come up, and bloom in perfection the season following." (*Rivers's Rose Amateur's Guide*, p. 65.) Scotch roses do not require any pruning, unless it be to trim them into shape. The yellow Scotch rose is a hybrid between the common Scotch rose and the yellow Austrian briar, *Rosa lutea*.

The Sweet-briar (*Rosa rubiginosa*), is nearly allied to the Scotch rose, and it requires the same treatment, with the exception that it grows best in chalky soil.

The hardy yellow roses are mostly raised from the Austrian briar (*Rosa lutea*), and either the Scotch rose or the sweet-briar. There are two kinds of the Austrian briar; viz. the common yellow, and the red or copper-coloured (*R. bicolor*), which has the inside of the flowers red, and the outside yellow. This rose is said not to be able to endure the smoke of London, but it flowers splendidly at Mrs. Marryat's at Wimbledon, and at Mr. Strachan's, Teddington Grove. The most common of the hybrid yellow roses are Williams's Double yellow briar, the Superb double yellow, and *Rosa Harrisonii*, the latter, which is by far the best, having been brought from New York by Mr. James M'Nab, some years ago. The common yellow rose (*Rosa sulphurea*), is very double, and cup-shaped, like a cabbage rose. It is said to be a native of the East; and a plant of it in its single state has been lately brought from Persia by Sir Henry Willich. The double variety is abundant in the south of France and Italy; but it never flowers well in England, unless it has a warm, sheltered situation, with a rich loamy soil, and abundance of air and light. Where the situation is too cold, and the soil too poor, or too wet, the roses become cankered, or the buds burst on one side, and then wither without expanding properly.

The hardy climbing roses are mostly varieties or hybrids of the Ayr-

shire, *Rosa arvensis;* and two of the finest are the Queen of the Belgians, a beautiful white rose, and *Rosa ruga*, a hybrid between the common Ayrshire and the tea-scented China, but quite hardy. This last is decidedly the best of all the climbing roses, from the beauty and fragrance of its flowers, and their great abundance. It is also of a very elegant habit of growth. The Ayrshire roses generally bloom a fortnight earlier than most other climbing roses; "they will grow where no other rose will exist;" and they are admirably adapted for covering outhouses, or any walls that it may be wished to conceal; for making bowers; and for climbing up the naked trunks of trees. They may also be used as undergrowth. None of these roses should be pruned.

The evergreen climbing roses are all varieties or hybrids from what Mr. Rivers calls "the climbing wild rose of Italy (*Rosa sempervirens*)." These roses Mr. Rivers describes as follows:—"The varieties of *Rosa sempervirens* are of the easiest culture, as they seem to flourish in all soils and situations. In sheltered places and under trees they are nearly evergreen, retaining their leaves till spring. This makes them valuable for covering banks, trees, or walls. I know of no rose idea prettier than that of a wilderness of evergreen roses, the varieties planted promiscuously, and suffered to cover the surface of the ground with their entangled shoots. To effect this the ground should be dry, manured, and thoroughly cleaned from perennial weeds, such as couch-grass, &c., and the plants planted from three to five feet asunder. If the soil is rich, the latter distance will do; they must be hoed amongst, and kept clean from weeds after planting, till the branches meet; they will then soon form a beautiful mass of foliage and flowers, covering the soil too densely for weeds of minor growth to flourish. Those weeds that are more robust should be pulled out occasionally, and this is all the culture they will require; for temples, columns, and verandahs, their use is now becoming well known. They also form elegant and graceful standards; like the Ayrshire roses, their shoots are pendulous, and soon hide the stem, in a few years forming a pretty dome of foliage and flowers. They are also very useful for covering the naked stems of forest, or ornamental trees; as their roots will not injure the tree which supports them; and if strong copper wire is brought loosely round the trunk of the tree to support their branches, they will give scarcely any trouble in such situations. To make them grow vigorously, give them a supply of manure on the surface annually, in the autumn, to be carried to their roots by the rains of winter. In autumn or winter pruning, their branches must be left their full length, for, if shortened, they will make prodigious long shoots the following season, but produce no flowers; as they are very flexible, they can be laid in and

twisted in any direction, but the use of the knife must be avoided as much as possible." (*Rose Amateur's Guide*, p. 87.)

The most beautiful hybrids belonging to this division are the Rose Clare and Madame d'Arblay.

The Boursault roses (*Rosa alpina*), are known by their "long, reddish, flexible shoots." They are not true climbers; but as they have long, slender shoots, they may easily be trained so as to form a pillar or pyramid. The name of Boursault is given to them, because the first variety was raised by M. Boursault, an amateur florist in Paris; this variety is the common double red, and it is still common in our gardens. The best Boursault roses are Rose de Lisle, of a pale blush colour; Drummond's Thornless, with a great profusion of bright, rich, deep red roses; and Gracilis, which "is a hybrid, of most vigorous growth in good soils, often making shoots from ten to twelve feet long in a single season; and unlike the other varieties of this division its shoots are covered with thorns." All the Boursaults should be left without pruning.

(*To be continued.*)

THE PHLOXES AS GARDEN AND PARLOUR PLANTS.

BY J. L. R.

(*From the American Magazine of Horticulture and Botany.*)

The hybridising of the Phloxes has been most satisfactory in rewarding the necessary care in experiments. What might be the effect of instituting some similar experiments on that dazzling beauty, the annual *Phlox Drummondii*, patience and skill only can determine. To secure a permanent and choice variety of this is very desirable, and a perennial hybrid of such a partial parentage would be quite a triumph. There are some of its natural seedlings of singular beauty in the collections of our florists; while others, probably still more perfect, could be produced through the many curious processes well known to the skilful experimenter.

These humbler Phloxes are, by the way, admirably adapted to parlour and in-door cultivation. A sod of *P. subulata*, var. *nivea*, in a frozen condition, and another similar piece of *P. stolonifera*, were potted in some good light soil towards the end of December last, and kept in a room at the average temperature of 55° Fahr. In about eight weeks they began to flower profusely, and formed very pretty objects, requiring no other attention than a plentiful supply of water, and as much light and sun as was convenient. When deprived of the direct influence of the sun, a singular

effect was produced; the fine rosy crimson of the blossoms of the latter were changed into a variegated purple hue. This little species, the *stolonifera*, is well known in almost every garden as a desirable spring flower; it is equally capable of gracing with beauty the windows of our sitting-rooms in winter. The snowy blossoms of *nivea* are equally attractive. Doubtless *P. ovata Listoniana* would do equally as well; and *P. divaricata*, with its beautiful light blue flowers, would be very elegant when growing in so early a season of the year. There can be no reason why all the dwarf sorts may not be so cultivated; and were they arranged, for instance, along the front lights of the common greenhouse of ordinary temperature, they might furnish a most abundant bloom, to aid in making up bouquets, when flowers are so much needed, and often so scarce. Many of the out-door garden flowers are thus peculiarly fitted to add a grace and an effect to the more tender and delicate; but as we see them mingled with hundreds of others, in our flower-beds, we are apt to overlook their particular beauty and individual charms. And though they are the hardy children of northern and colder latitudes, yet they mingle well with the sunny beauties of more favoured climes, losing nothing by the comparison, and lending their happiest aid. J. L. R.

Chelmsford,
April, 1841.

MR. ELLIS'S PLANT-CASE.

(*Continued from page* 315.)

In opposition to these results, Dr. Priestley, from certain experiments, was led to believe that plants, instead of vitiating the air by their vegetation, reverse the effects produced in it by combustion and the respiration of animals, and thus become the chief means by which the purity of the atmosphere is maintained (*Observations on Air*, *abridged*, vol. iii. p. 251). He caused plants to vegetate in vessels of air which had been previously vitiated by combustion or respiration, and in some instances this foul air was restored by the plants to a condition capable of again supporting those processes; but he did not ascertain the mode in which the air itself was vitiated, although he believed that light contributed to effect its subsequent purification. His great contemporary, Scheele, repeated these experiments, but could never find the foul air which he employed to be purified by growing plants, either when the vessels were placed in sunshine or in shade. For this difference in their results a sufficient reason may be found in the fact, that the foul air used by Priestley consisted, in part, of

the carbonic acid gas previously produced in it by respiration or combustion; whilst, in all the experiments made on foul air by Scheele, he carefully removed this acid gas by washing the air in milk of lime before placing the plants in it (*On Air and Fire*, p. 37, 163), a procedure, as will presently be shown, quite sufficient to defeat the object of purifying the air.

In other experiments, made on the purification of air by the green matter which often forms on the sides of vessels filled with stagnant water, Priestley spoke with more decision regarding the agency of light; maintaining that pure air was never produced by such matter while kept in the shade, but only when exposed to light; that the water which contained most fixed air yielded pure air most abundantly in sunshine; and that, by the agency of the sun's rays, this fixed air might be entirely dissipated, leaving only a residue of pure air. If when this green matter was yielding pure air most abundantly in sunshine, the glass vessels were removed into a dark room, or the solar rays were intercepted by a covering of black wax, the process, he added, ceased entirely (*Observations on Air*, vol. iv. p. 337). These results were confirmed and extended by the experiments of Ingenhousz, who ascertained that the air which had been deteriorated by the growth of plants, in the shade or through the night, recovered its former purity when exposed even for an hour and a half to the agency of the morning sun. In like manner, air which had been vitiated by respiration, and in which the carbonic acid gas was suffered to remain, was soon purified by plants in sunshine, but not when they were kept in the shade. This purification, he added, was effected only by the leaves and green succulent stems, and by leaves even when detached from the stem and immersed in water. In all his experiments, carbonic acid gas seems to have been present; and he ascribes to plants the singular power of converting that gas into respirable air, when exposed to the sun; not, however, by any process of vegetation, but solely by the operation of solar light (*Expériences sur les Végétaux*, t. 1, p. 263, &c.)

In addition to these facts, M. Senebier showed that light was not only necessary in this process of purification, but that it acted independently of heat; for he has seen leaves, when confined in water charged with carbonic acid, produce oxygen gas by the agency of light in winter, when the temperature was many degrees below freezing. In every such case, however, the oxygen is derived directly from the decomposition of carbonic acid, and is always in proportion to the existing volume of that gas; but it is never furnished by the leaves themselves, independently of light. (*Physiol. Vég.*, t. iii. p. 195.) To these authors succeeded M. Theodore De Saussure, who, by numerous experiments on plants confined in close

vessels, and conducted alternately in sunshine and in shade, by careful and exact analyses of the air in its different conditions, and by accurate measurements of its quantities at different periods of the experiment, has removed many apparent anomalies, and opened the way, as we think, to a consistent and satisfactory view of the subject.

In his experiments before referred to, and published in the *Annales de Chimie*, 1797, this distinguished Chemist found that when garden peas (*Pisum sativum*), which had attained to the height of between three and four inches, were placed in a recipient of atmospheric air, inverted in a saucer filled with water, and then set aside in a room well lighted, but which did not receive the direct rays of the sun, they grew well. At the end of ten days the volume of air was considerably diminished, its purity greatly impaired, and it still retained $\frac{6}{100}$ of carbonic acid. Plants of *Mentha aquatica* effected similar changes in the air, whilst they continued to grow in the shade; whence it is inferred that plants, like animals, continually deteriorate the air, by converting its oxygen into carbonic acid gas, when they vegetate in the shade; a result confirmed by many experiments long since made by the author, and given to the public in the years 1807 and 1811.

In prosecuting his experiments on vegetation under the direct influence of light, M. De Saussure was led, with others, to the conclusion, that, if the air which may have been deteriorated by the growth of plants in the shade, be exposed for a short time to the sun's rays, it recovers its former purity. In his *Recherches Chimiques sur la Végétation*, published in 1804, he has established this position by numerous experiments on various plants, as *Mentha aquatica*, *Lythrum Salicaria*, *Pinus sylvestris genevensis*, and *Cactus opuntia*. These plants were confined in glass vessels of atmospheric air, and kept for eighteen or twenty hours in the shade, or in perfect darkness; but early in the morning the vessels were taken out and exposed for four or five hours to a bright sunshine; after such exposure, the air was examined, and was then found to have suffered no change whatever, either in purity or in volume.

By other experiments, the author next proceeds to show that, though the air when thus exposed to light had recovered its original composition, it must, during the experiments, have undergone successive changes of deterioration and renewal. If a substance, as moistened quicklime, which strongly attracts carbonic acid, were placed in the vessel with the growing plants, the volume of air was observed to diminish, even although the apparatus were placed in sunshine; the air, too, when analysed on the fifth or sixth day of the experiment, afforded only $\frac{16}{100}$, or had lost five per cent. of oxygen gas; whilst similar plants confined in another vessel, but

without lime, produced no change, either in the purity or volume of their atmosphere. Now, the diminution of volume in the experiment with lime shows that there had been an attraction, and consequently a formation of carbonic acid gas; for the lime which produced the diminution acted only on that gas. The experiment, it is added, shows farther, that the formation of carbonic acid gas is necessary to vegetation, even in sunshine, and that the reason why we do not perceive its production by the plants which vegetate without lime in common air, is because they then decompose it in proportion as they form it with the surrounding oxygen. (*Recherches Chim.*, p. 35, 36).

This inference, respecting the simultaneous formation and decomposition of carbonic acid, derived from experiments made with common air, is supported by others, in which an artificial atmosphere, containing about seven per cent. of carbonic acid, was employed. Plants of the same species as those before mentioned were made use of; the same periods of alternate exposure in the shade and in sunshine were observed; and the same times allotted for the duration of the experiments. The total volume of air, at the end of the experiments, had undergone little variation, but its composition was greatly changed. The carbonic acid gas which was added to the atmosphere had more or less completely disappeared, and its place was supplied by an increase of oxygen gas, so as to raise its proportion from twenty-one to twenty-four or twenty-six per cent. In these experiments, therefore, not only was the carbonic acid naturally formed by the vegetation of the plants decomposed, but the excess of that gas which was added to the atmosphere underwent the same change; and the proportion of oxygen gas was consequently increased by five or six per cent. beyond that which occurred in the experiments with common air.

From the results of these experiments, we learn that plants, like seeds, require the presence of oxygen gas in the atmosphere in which they grow, and, like them, also convert a portion of it into an equal volume of carbonic acid gas. This conversion is alike effected by their growth in the shade and sunshine. In the former case, however, the presence of this acid gas may be readily detected in the residual air by the usual tests; but in the latter it escapes detection, because it is then decomposed as soon as formed, by the joint agency of the plants and solar light. Under a bright sunshine, therefore, the two processes by which carbonic acid is alternately formed and decomposed go on simultaneously; and their necessary operation, in as far as regards the condition of the air, is that of counteracting each other. Hence, though both may be continually exercised in favourable circumstances, the effects of neither on the atmosphere can be ascertained by ordinary means; and consequently, though

in the experiments of De Saussure with common air the production and decomposition of carbonic acid by plants in sunshine must have been continually going on, yet, in all the analyses which he made, the air was found unchanged, either in purity or in volume; in other words, the processes of formation and decomposition of this acid gas exactly counterbalanced each other.

Of the two processes which have been now described, each may be considered as in its nature and purpose quite distinct from the other; hence, their effects may be readily distinguished; neither do they necessarily interfere when actually working together. The first, or deteriorating process, in which oxygen gas is consumed, goes on at all times and in all circumstances, when vegetation is active. It requires always a suitable temperature in which to display itself; and when that temperature falls below a certain point, which is very variable in regard to different plants, the process is more or less completely suspended, again to be renewed when the temperature shall again return. This conversion of oxygen into carbonic acid is as necessary to the evolution of the seed as to the growth of the plant, and is all that is required for germination; but the plant requires something more, for if light be excluded, vegetation proceeds imperfectly, and the plant does not then acquire its proper colour, and other active properties which it ought to have. The chief organs by which the consumption of oxygen gas is affected are the leaves; and its purpose, in great part at least, seems to be that of producing some necessary change in the sap during its transmission through those organs, on its way from the vessels of the wood to those of the inner bark, whereby it may be rendered fit for the purposes of nutrition and growth.

In its nature and object, therefore, as well as in the specific change which it produces in the air, this process closely resembles the function of respiration in animals, and may thus with propriety be deemed a physiological process.

The second, or purifying process, in which oxygen gas is evolved, differs in all respects, from that which has just been described. It is in a great measure independent of temperature; at least it proceeds in temperatures too low to support vegetation, provided light be present, an agent not required for germination, nor essential to vegetable development. The organs by which this process acts on the air are, as before, the leaves; not, however, by changing the qualities of the sap in the vessels of those organs, but by producing changes in the chromule, or colourable matter, in their cells, to which it imparts colour and other active properties. In doing this, it does not convert the oxygen gas of the air into carbonic acid, but, by decomposing that acid gas, restores to the air the identical

portion of oxygen of which the former process had deprived it. The former process, carried on by the agency of the oxygen gas of the air, was essential to living action, and affected the well-being of the whole plant: that exercised by the agency of light is not necessary to life; is local, not general in its operation; and is capable of proceeding in circumstances and under conditions incompatible with living action. By withdrawing the air altogether, or depriving it of oxygen gas, vegetation soon ceases through the whole plant; but the exclusion of light from any part of the plant affects that part only; and even the total exclusion of that agent only deprives the plant of certain properties necessary to its perfection, but not essential to its life. These differences in the processes by which oxygen gas is alternately consumed and evolved, during the vegetation of plants in sunshine, are so manifest, both in their nature and effects, as to justify the ascription of a name to the latter process distinct from that given to the former. It might, perhaps, be denominated the chemical process, in contradistinction to that named physiological.

It would contribute much, we think, to simplify our inquiries concerning vegetation, to bear in mind these distinctions: to consider the one process as accomplished by the agency of the air, and essential to the life and growth of the plant; the other, as subordinate, depending on the agency of light, and though necessary to the perfection of vegetation, yet not essential to its existence. In this manner, each process may be followed out separately, both in regard to its immediate effects and remote consequences, without clashing with the other; and the apparently discordant and even contradictory phenomena which, on a first view, they seem to exhibit, may be reconciled, and considered, not less in theory than in fact, as conspiring together to form one harmonious and perfect whole.

Applying these views to the subject under consideration, we see no difficulty in comprehending how the same identical volume of air in the plant-case of Mr. Ward, should, for so long a period, serve the purposes of vegetation, without becoming foul from within, or receiving or requiring renewal from without. The experiments of De Saussure furnish, as we have seen, examples of a similar kind, and supply, at the same time, the desired explanation. The daily depravation and subsequent purification which the air underwent in the glass vessels of that eminent chemist, must be equally accomplished, under similar circumstances, in the glass cases of Mr. Ward, that is, when their plants are similarly exposed to vegetate alternately in sunshine and in shade. And as the former found the air to continue for many days together unchanged, either in purity or in volume, when so treated, so must the air in the

plant-cases of the latter preserve, under similar treatment, its original composition and purity; not, however, by continuing always the same, but by simultaneously undergoing opposite changes in sunshine, or successive changes by alternate exposure to light and shade, which mutually counterbalance each other. Thus the deterioration of the air occasioned by vegetable growth is counteracted by another process, necessary to the perfection of the plant; and, amidst the vicissitudes of perpetual change, the atmosphere of these cases is maintained in a state of nearly uniform composition and purity. In this way, the same air, by changes of composition, like the same water, by changes in its state or condition, may be made to serve over and over again the purposes of vegetation.

There is one circumstance of difference in the experiments of De Saussure, as compared with those of Mr. Ward, which it may be proper to notice. In the experiments of the former no soil was used, but only a thin stratum of water, in which the roots of the plants were immersed, covered the surface of the mercury over which the vessels were inverted. In the cases of Mr. Ward, the plants were set in earth. Now, vegetable soil is known to deteriorate the air, by forming carbonic acid with its oxygen, in the same manner as plants do; but the acid gas, which may thus be produced, was found by De Saussure to be decomposed by the joint agency of the plants and light, like that produced by ordinary vegetation; and, consequently, the air suffered no permanent injury. Indeed, an excess of carbonic acid, not exceeding $\frac{1}{12}$ of the atmosphere in which plants were confined, accelerated their vegetation in sunshine, by increasing the proportion of oxygen; whilst the smallest doses of this gas proved injurious to that process in the shade.

The foregoing facts demonstrate the power of light to decompose carbonic acid gas in plants. This decomposition, however, can be effected only by the concurring agency of the light and the plant; and, whilst the acid gas is thus decomposed, the plant itself acquires a tint of green; so that the evolution of oxygen gas by the plant, and the formation of its green colour, always proceed together. Now, as the chromule, which imparts colour to the leaf, is lodged in the cells of the parenchyme, it is in those cells that we must suppose the decomposition of the acid gas to be effected, and from them also the oxygen gas must proceed. The mode in which this colouration is probably accomplished may receive illustration from the facts which follow. The "colourable principle," or chromogen of Dr. Hope, is readily extracted by water, and the colourless infusion which is thus formed becomes red on the addition of an acid, and green on the addition of an alkali. If a neutral salt be dissolved in this infusion,

it still remains colourless; but, if this salt be decomposed by electrical agency, then the acid and alkaline ingredients, being separated, at once produce their red and green colours. Now, if we suppose the carbonic acid gas, which enters the parenchyme of the leaves, to be attracted by, and to combine with, the alkaline matter which is so abundant in those organs, it may there form a neutral salt, and whilst this neutral state continues the leaf will remain colourless; but if the chemical rays of light, acting like electricity in the example before given, decompose this carbonate, and cause the expulsion of its acid ingredient, then the alkali, becoming predominant, will produce its usual effect on the xanthogen of the leaf, and its chromule will in consequence be rendered green. In order to maintain this green colour in the leaf, the action of light on its saline ingredients must be regarded as in continual operation; and hence its exclusion, by suspending that action, is followed by a gradual loss of colour; and, as the carbonic acid gas is no longer decomposed, the leaf at the same time ceases to afford oxygen gas. The colouration of the leaf, therefore, is not immediately due to the evolution of oxygen, nor even to the subtraction of carbonic acid, but to the predominance of alkaline matter which that subtraction of acids occasions; consequently, the verdure succeeds to the decomposition of the acid, the evidence of which is afforded by the expulsion of oxygen gas. Hence, to speak correctly, we cannot so properly say that the green leaf affords oxygen, as that it becomes green when that gas is expelled; and thus it is, that the decomposition of carbonic acid by the agency of light gives rise, at once, to the evolution of oxygen gas, and the formation of the green colour in plants.

Conclusion.—We cannot close our remarks without congratulating Mr. Ward on the occurrence of the fortunate incident which first suggested his inquiries, and on the zeal and perseverance displayed in the experiments which ultimately terminated in the construction of the apparatus which has so long engaged our attention. To himself success must be peculiarly gratifying, inasmuch as it enables him to indulge his taste in the pursuit of a favourite science, which the locality of his residence otherwise forbade him to cultivate.

It is a great advantage of his method that it may now be put in practice by others, as it was at first by himself, simply by confining a single plant in a bottle, as well as by enclosing a greater number in the more costly apparatus which has just been described. It may, therefore, be practised to any extent, or adapted to any scale of expense, which the individual may find it either convenient or desirable to employ. When once fitted up, the apparatus, be it either small or large, requires scarcely

any farther care or attendance. No fresh watering or airing is at any time required; nor is any inconvenience experienced from dust and litter, which often render the ordinary mode of keeping plants in well-furnished apartments objectionable and troublesome. Farther, as the plants in this apparatus are shut off from all communication with the external air, no apprehension of their injuring the atmosphere, even of close rooms, can be reasonably entertained. The only condition, in regard to attendance, that claims observance, is an occasional exposure to light, perhaps for a short period only on days of sunshine, and for a longer one when the light is more feeble. These are advantages which render the method easily practicable by persons of every class, and will enable those who are condemned to live in a smoky atmosphere to refresh their sight with specimens of healthy vegetation within their own abodes, although the district around them should exhibit only the sickly and stunted forms of vegetable existence.

The celebrated Franklin, who looked at everything with the eye of a philosopher, and sought to turn to some useful purpose every observation which he made, in recording the reminiscence of some common flies which had made a voyage from Virginia to England in a bottle of Madeira wine, goes on to state that a plant with its flowers fades and dies if exposed to the air without having its roots plunged in a humid soil, from which it may draw moisture to supply the waste of that which it exhales, and which is continually carried off by the air. Perhaps, he adds, if it were buried in quicksilver, it might preserve for a considerable time its vegetable life; and, if this be the case, it might prove a commodious method of transporting from distant countries those delicate plants which are unable to sustain the inclemency of the weather at sea.

The ingenious suggestion of the American philosopher has been happily realised in practice by Mr. Ward, in a way much more simple and efficient than that which Franklin proposed. By its means the rarest and most delicate plants have been transported to and from the most distant countries, with little or no trouble in regard to attendance, and scarcely any risk of suffering from the inclemency of the weather at sea. He has thereby conferred on the botanist and horticulturist benefits which no researches of travellers, however successful, nor expenditure of money, however great, could have enabled them otherwise to procure. Instead of simple descriptions, or dried specimens, or fine pictures of foreign plants, they can now fix their eyes on living specimens retaining their native freshness and beauty, and possessing all their natural and characteristic properties. Already have exchanges of plants between distinct countries been carried on to a great extent; and the public

conservatories, as well as those of private individuals, been enriched with specimens of many rare plants, which could scarcely have reached them by any other means. Thus, under the modified conditions with regard to climate, and the renovating processes in relation to water and air, which we have attempted to illustrate, the botanist and horticulturist may be said to have entered on new and unexplored fields of vegetable research, and to have acquired the means of transporting to their own soil the varied and most delicate plants of every region of the earth.—(*Gard. Mag.*, vol. xv. p. 481.)

REVIEWS.

The Botanical Magazine for September contains:—

Sida (*Abutilon*) *Bedfordiana*, Hook. This is a small tree, discovered in the Organ mountains by Mr. Gardner, who has lately returned from Brazil, and its flowers strongly resemble those of *Abutilon striatum*. It flowered for the first time in the stove at Woburn in November last.

Marianthus cœruleo-punctatus, Link, Klotz, and Otto. This beautiful plant has been already figured in our Number for July, Plate vii.

Hypocalyptus obcordatus, Thun. A leguminous plant, before figured in the Botanist.

Bossiæa tenuicaulis, Grah. An abundant-flowering species from the Swan River, introduced in 1836.

Oxalis lasiandra, Grah. A very handsome species from Mexico.

Pleurothallis picta, Hook. A very pretty Mexican epiphyte, with pink flowers.

The Botanical Magazine for October contains:—

Epidendrum (*Encyclium*) *calocheilum*, Hook. An orchideous plant from Guatemala, introduced in 1839.

Salvia confertiflora, var. A splendid variety of this new Salvia, with very short flowers.

Mormodes pardina, Bate. A beautiful orchideous plant, with flowers of a bright yellow, spotted with brown.

Tithonia ovata, Hook. A weedy-looking perennial from Mexico, with yellow flowers, belonging to *Compositæ*.

Strobilanthes sessilis, Nees. A beautiful plant, belonging to *Ruelliaceæ;* introduced from Bombay in 1833.

Chorozema spectabile, Lind. A pretty Chorozema, raised in 1840 by Messrs. James Dickson and Co., of Edinburgh, from seeds received from New Holland.

The Botanical Register for September contains :—

Boronia triphylla, β latifolia, Sieb. ; *B. ledifolia,* Hort. A very pretty New Holland shrub, with clusters of star-like flowers, of a "deep, rich, ruby red." It is suitable for a greenhouse, or the window of a living-room, and it requires the same treatment as a Diosma.

Odontoglossum pulchellum, Bate. An orchideous plant from Guatemala, with white flowers. On this plant Dr. Lindley observes, "it is now well known that many orchidaceous plants from Mexico and Guatemala require less heat than is generally kept in our moist stoves, and to many of them it is particularly injurious, if applied at those seasons when the plants are in a resting state. This is a plant belonging to this class ; and therefore there is nothing worse than over excitement, caused by the application of a high temperature and moisture at those seasons when it ought to be kept cool and dry."

Æschynanthus grandiflorus, Spreng. A splendid stove plant, now become common in collections.

Placea ornata, Miers. A pretty little bulb, a native of Chili, not yet introduced.

Clianthus carneus, Lindl. ; *Streblorhiza speciosa,* Endl. This plant is a half-hardy evergreen twiner, with pink flowers, like those of *Clianthus puniceus* in shape. It grows and flowers freely, only requiring a good loamy soil, and it is now becoming tolerably common in the nurseries ; at least I have found it in several places, particularly in the nursery of Messrs. Backhouse, at York.

Dendrobium discolor, Lindl. An orchideous epiphyte, with yellowish brown flowers, from Java ; introduced in 1838.

The Botanical Register for October contains :—

Tabernæmontana dichotoma, Roxb. A beautiful stove plant, with large, white, very fragrant flowers, from Ceylon.

Statice monopetala, Lin. This species, which has deep, rose-coloured flowers, differs so much from the common sea Lavenders as to be thought by Dr. Lindley to belong to another genus. It is very nearly hardy.

Bossiæa disticha, Lindl. "A pretty little shrub, raised in the garden of the Horticultural Society, from Swan River seed, presented by Captain James Mangles, R.N., and flowering in March."

Pharbitis Learii, Lindl. The beautiful plant already so well known under the name of *Ipomœa Learii.*

Cœlogyne cristata, Lindl. A handsome Indian epiphyte, with large white and yellow flowers.

Mirbelia speciosa, Lindl. A handsome New Holland dwarf shrub, with abundance of pale purple flowers, which flowered at Messrs. Loddiges'. It is nearly allied to *M. floribunda.*

In PAXTON'S MAGAZINE OF BOTANY for July are the following plants:—

Goldfussia glomerata. A showy stove plant, which has been figured before.

Boronia ledifolia. The same plant as is figured in the Botanical Register for September, as a variety of *B. triphylla.*

Pascalia glauca. This very showy, bright, golden yellow flower, bears some resemblance to a sunflower, but it is distinguished from that well-known flower by an "elegance of character in the stem and leaves, a gracefulness and length in the flower-stalk, and a certain style of beauty in the buds and flowers." It was introduced from Chili forty or fifty years ago, but being only half-hardy, it is by no means common in gardens. It is increased by dividing the roots in spring instead of autumn.

Lilium speciosum, var. *album.* A splendid Japan lily, the flowers with recurved petals, but quite white.

PAXTON'S MAGAZINE for August contains:—

Galeandra Devoniana. A handsome orchideous plant, from British Guiana, the stems of which often grow five or six feet high, the blossoms being white and purple.

Zichya pannosa. A showy climber from the Swan River, of luxuriant growth, and producing a profusion of clusters of its dark scarlet flowers.

Erica Jacksonii. A hybrid between *E. Irbyana and E. retorta.*

Lechenaultia biloba. This blue Lechenaultia excited so much attention during last summer, that it is now become pretty generally known. It is a pretty plant, though very far inferior to the well-known favourite, *L. formosa*, the dark scarlet flowers of which enliven our greenhouses during so large a portion of the year.

PAXTON for September contains:—

Rosa Devoniensis. A very large, cream-coloured hybrid rose, very fragrant, flowered by Messrs. Lucombe and Prince, of the Exeter nursery.

Schizanthus Evansianus. A very beautiful and distinct hybrid Schizanthus, raised in 1839 by Mr. Evans, gardener to Mrs. Batty, at New Hall, near Salisbury.

Chorozema Dicksonii. A very showy species of Chorozema, which has been figured before.

Daphne japonica. A beautiful Daphne, remarkable "for the broad yellow margin of its fine evergreen foliage, and for the delicious scent of its flowers;" their fragrance resembling that of the leaves of the lemon-scented Verbena, *Aloysia citriodora.* It has hitherto only been kept in a greenhouse, but it will most probably prove, like the other Japan shrubs, quite hardy.

PAXTON'S MAGAZINE for October contains:—

Burlingtonia rigida. A very beautiful and singular orchideous plant, with very pale pink flowers, produced in heads or clusters.

Kaulfussia amelloides. A well-known annual, frequently figured before, but perhaps never so well.

Cuphea Melvillia. An old, but very showy perennial, with clusters of crimson and green flowers, requiring a stove in England.

Tropæolum Moritzianum. A showy perennial species of Tropæolum, figured before.

THE BOTANIST for September contains:—

Bigonia nitida, Hort. Kew.; *B. obliqua*, L'Hérit. A greenhouse species, with large white flowers, from the mountains of Jamaica, introduced in 1779.

Gonolobus hispidus, Hook. A handsome twining shrub, with dark red flowers, before figured in the Botanical Magazine.

Genista bracteolata, Lindl.; *Cytisus chrysobotrys*, Hort. A native of Teneriffe, with large yellow flowers.

Lobelia Cavanillesii, Martius. This is one of those plants usually called *Siphocampylus*, and it is very much like *S. bicolor.*

In addition to the above plants, I may mention a very beautiful Helichrysum which I saw at York, in the nursery of the Messrs. Backhouse; *H. retortum*, a native of the Cape of Good Hope. It has short recurved leaves, covered with white down, and white flowers tinged with pink on the back. It was introduced about fifty years ago, but was soon lost; and it has been now re-introduced by Mr. J. Backhouse, who has lately returned from South Africa.

RETROSPECTIVE CRITICISMS.

MODE OF STRIKING CUTTINGS FROM THE LIVING TREE.

In your last No. p. 229, you gave a mode of making cuttings, but this is not new: it was practised by Humboldt many years ago, and is common in Germany. J. C.

Brighton,
Aug. 4, 1841.

Fig. 79.

I am perfectly aware that a mode somewhat similar to the one mentioned in p. 229 has been long practised, but still it may have been new to many of my readers. Fig. 79 shows a somewhat similar plan, with a bell-glass with a hole in it. It is related by Humboldt, that when he saw any tree that particularly pleased him, and that was not in seed, he took off a ring of bark from a branch, and gathering together some of the earth in which the tree grew, he made a kind of plaster like that of clay which is applied to new made grafts, and put it round the branch just above the ring, making it fast with some strips of cere-cloth, which he always carried about with him for that purpose. The humidity of the forests of South America, where this experiment was tried, rendered the siphon shown in fig. 67 unnecessary; and the sap, checked in its descent by the ring taken out of the bark, expended itself in roots, which found nourishment in the earth contained within the cere-cloth. Thus, when Humboldt returned to the place (which he took good care to mark), some months afterwards, he found, instead of a dry specimen, a living tree awaiting him, which only required to be severed from the parent plant, to be fit for transporting to Europe. Most of the living specimens brought by Humboldt from South America were obtained in this way.

QUERIES AND ANSWERS.

A MIXED FLOWER-GARDEN.

Madam,—Having just become the possessor of a small garden, I should be much obliged if you would give me some directions how to lay it out with mixed borders, or rather if you would give me a "*working plan*" of mixed borders, so as to flower from May to August or September; if

you would add a list of fuchsias, with directions for their culture, and where they may be got, and about what prices, you would greatly oblige

A Lover of Flowers and Fuchsias.

September 23*rd*, 1841.

As *early* a notice as possible of this question in your work, the "Ladies' Magazine of Gardening," would be very acceptable.

To answer my correspondent exactly as to the price of fuchsias, and where they can be obtained, would subject me to the advertisement duty; and to give a list of all the different kinds, including the different hybrids and varieties, would be very difficult, as they are varying every day by the introduction of new seedlings. Perhaps the best for a small garden are the following:—

Fuchsia globosa, a dwarf plant, and abundant flowerer, killed down to the ground in winter, but coming up again in spring. This is the cheapest kind, and it is common in every nursery.

F. discolor, the Port Famine Fuchsia, a tall shrub, flowering abundantly, and the hardiest of all the kinds, very seldom sustaining any injury from frost.

F. fulgens, a splendid bush, growing to a large size in rich ground in the open air during summer, but requiring protection during winter.

F. corymbiflora, a tall plant, requiring the same treatment as the preceding species; rather dear at present.

F. radicans, the Peruvian Fuchsia, a climbing plant, with beautiful flowers. This species is quite new, and as yet rare and dear.

F. virgata and *F. coccinea*, old and cheap species, forming large bushes; which will live in the open air during summer, but which are killed to the ground every winter.

F. gracilis, an old species, rather more tender than the last, but which when trained as a standard, and then suffered to form a head, makes a beautiful weeping tree.

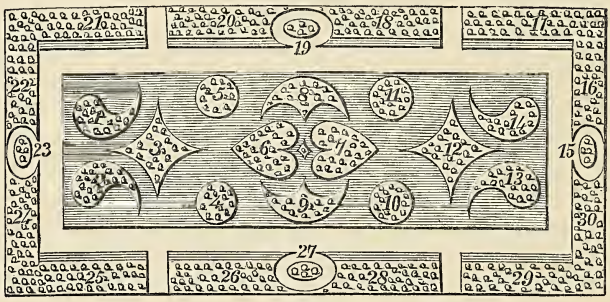
Of the hybrids, *F. Chandlerii*, from *F. fulgens* and *F. discolor*; *F. Standishii*, from *F. fulgens* and *F. globosa*; and *F. Youelli*—are the handsomest.

F. arborescens is a greenhouse shrub with small purplish flowers, and will not flower in the open air. *F. microphylla* and *F. cylindrica* are small-flowered kinds, which are nearly hardy.

Fig. 80 (lent to me by Captain Mangles), is a working plan for a small garden, with a list of plants which will flower from May to September; but if this should not suit my correspondent, the ground may be divided into beds, and planted in front with snowdrops and crocuses; behind which may be hyacinths and other bulbs. Alternately with spots of these

may be small beds of pansies, and behind these may be roses, while the back-ground may be dahlias. To make this mode of arrangement clearer we may suppose the beds marked 20 and 18, in *fig.* 80, and all the similar ones, planted with alternate tufts of bulbs and heartseases, with dahlias behind; and the little beds, 19, 27, 15, and 23, planted with roses. The bulbs and pansies will produce a good effect during spring, and when they fade, they will be succeeded by the roses; the dahlias coming in just as the roses are over. If the garden is walled, the wall may be covered with chrysanthemums, which will be just ready when the dahlias have done flowering and are cut down. A succession of flowers may thus be procured during very nearly all the year; as the snowdrops will begin to flower in February, and the chrysanthemums will continue in flower till the latter end of January.

Fig. 80.



The following list will keep the beds in flower from May to October; and where two plants are mentioned, one is to succeed the other.

1. Anagallis Monelli.
2. Anagallis grandiflora.
3. Scarlet geraniums and Delphinium grandiflorum.
4. Verbena Drummondii and Antirrhinum major.
5. Verbena melindris and double white Antirrhinum.
6. Calceolaria viscosissima and double white Lilies.
7. Fuchsia Thomsonia and Delphinium Barlowii.
8. Lantana Sellowii and Verbena aubletia.
9. Verbena Aranaina and Eschscholzia crocea.
10. Verbena Tweediana and Lobelia lutea.
11. Lobelia erinus and Antirrhinum caryophylloides.
12. Crassula coccinea and Heliotropium peruvianum.
13. Verbena aubletia and Mesembryanthemum spectabile.
14. Mesembryanthemum blandum and Petunia intermedia.
15. Œnothera macrocarpa and Campanula garganica.
16. Double Scarlet Lychnis and new white and other light-coloured Petunias.
17. Fuchsia globosa and Delphinium sinense.
18. Œnothera Drummondii and Phlox cordata.
19. Petunia nyctagini flora and Aster amelloides.
20. Petunia phœnicea and Hydrangeas.
21. Variegated-leaved scarlet Geranium and Delphinium grandiflorum.
22. Œnothera missouriensis and Mesembryanthemum floribundum.
23. Phlox Drummondii and Petunia gracilis.
24. Œnothera Drummondii and Campanula latifolia.
25. Calceolaria bicolor and Calceolaria integrifolia.
26. Phlox reflexa and Prince of Orange Geranium.
27. Tigridia Pavonia and Nolana atriplicifolia.
28. Delphinium grandiflorum and Œnothera taraxacifolia.
29. Gladiolus psittacinus and Verbena Lambertia.
30. Brighton scarlet geraniums and Œnothera macrocarpa.

CHANGING THE COLOUR OF FLOWERS.

Is it possible to change the colour of a white flower?

S. F.

Eastbury, Kent,
September 30th, 1841.

Dr. Liebig, in his Organic Chemistry applied to Agriculture, states that a white hyacinth may be changed to pink, by sprinkling the soil with the juice of the Virginian poke-berry (*Phytolacca decandra*). A similar effect has been produced by a decoction of indigo or logwood; but in all cases the colour does not appear to be permanent, Experiments, however, might easily be tried on the subject; remembering that the colour employed must always be a vegetable dye.

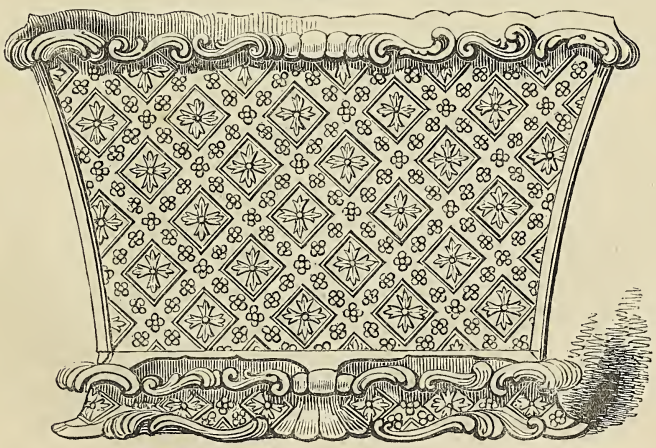
EARTHENWARE FLOWER-POTS.

A great deal has lately been said about using glazed flower-pots; but I have found small China flower-pots injure the plants grown in them. Can they be used in any circumstances without hurting the plants grown in them; and if they can, what precautions must be used?

S. Thompson.

Cambridge Terrace, Victoria Gate,
October 6th, 1841.

Fig. 81.



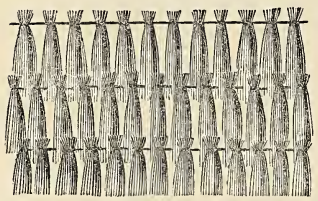
As my correspondent lives near Captain Mangles, she must have seen the beautiful China flower-pots used by that gentleman, certainly without

the plants contained in them suffering any injury. I believe, if of a large size, as *fig.* 81, (which is one of Captain Mangles's), China flower-pots may be used on a balcony, in most cases not only without injury, but with advantage; but if small, and not well drained, the earth in them, from their want of porosity, becomes sodden with water, or what gardeners call sour, and this destroys the plants.

FLORAL CALENDAR.

As November is a month when, from the near approach of winter, every lingering flower is doubly valuable, such of my readers as may chance to have half-hardy flowering plants against walls, may be glad to know how to protect them during frosty nights, so as to prolong their flowering season as long as possible. There are many ways of doing this; but perhaps the cheapest and best plan for a small garden, is to tie a number of wisps of straw together, as shown in *fig.* 82, and to hang these on hold-fasts driven into the wall to receive them.

Fig. 82.



Protecting by wisps of straw.

No person should attempt to grow half-hardy plants on a conservative wall, without its being provided with these hold-fasts; as the covering will be only required during the night, and should be removed during the day. In November, cold frosty nights are often succeeded by bright sunshine in the days, and it is in such weather that this mode of covering is particularly useful.

November is the season for taking up the Dahlias. As soon as the flowers and stems are killed down to the ground, they should be cut off and thrown away, leaving the tubers in the ground a week or ten days to dry. They should then be taken up, and a parchment label, with the name of the Dahlia written on it, should be attached to each by wire; after which they should be laid on boards in a cellar, or any dry place, and covered with sand or sawdust. They should be kept at a temperature between thirty-five and forty-five degrees, so as to exclude the frost, but not to heat them too much.

Crataegus Pyracantha multiplex.

CRATÆGUS OXYACANTHA, *L.*; *var.* ROSEA FLORE PLENO. THE DOUBLE PINK HAWTHORN.

Cratægus, *Lin.* *Nat. Ord.* Rosaceæ. *Lin. Syst.* Icosandria Di-pentagynia.

Generic Character.—Calyx with an urceolate tube, and a five-cleft limb. Petals orbicular, spreading. Ovary 2—5-celled. Styles 2—5, glabrous. Pome fleshy, ovate, closed by the calycine teeth, or the thickened disk, containing a bony putamen. Thorny shrubs and trees, with angular or toothed leaves, and terminal corymbs of flowers. Bracts subulate, deciduous.

Specific Character.—Leaves obovate-cuneiform, trifid or pinnatifid, glabrous and shining; flowers corymbose, monogynous and trigynous; calyxes glandless, acute.

Variety.—C. O. rosea, flore pleno, *Hort.* Flowers pink, double.

Engraving.—Our Plate xii.

Description, &c.—This very beautiful variety, though occasionally seen in our shrubberies, has, I believe, never been before figured. It is very double, and of a richer and deeper rose-colour than the common pink hawthorn; and when the trees are fully in flower, they look as if covered with clusters of fairy roses. Nothing can have a finer effect than one of these trees in early spring, standing on a lawn with a background of green; or planted on the margin of a shrubbery. The whole genus *Cratægus* is highly ornamental; some of the trees are remarkable for their large, yellow fruit, as, for example, *C. Aronia* and *C. tanacetifolia*; in others the fruit is large, and of a deep coral red, as in *C. odoratissima* or *C. orientalis*; and in others of a deep claret colour, as in *C. Douglasii*. All the kinds have handsome foliage; and in some, as in *C. crus-galli* and its allies, the leaves are shining, and of a rich, deep green. *C. salicifolia* has a naked trunk, with its branches forming a broad, spreading head, like that of the Italian stone-pine, and produces a striking effect in the landscape. I am induced to say more than perhaps I otherwise should on this subject, because this is the season for planting, and I am sure that if any of my readers should be induced to plant an additional tree or two of this genus from anything I can say, they will not repent having done so. Some of the species are nearly evergreen; as, for example, the Washington Thorn (*C. cordata*), mentioned in p. 352. These trees vary very much in their time of flowering; the flowers of *C. purpureus* appearing in March or April; and those of *C. virginica* in July or August. *C. spathulata* and *C. cordata* are also very late in coming into flower; and *C. nigra* and *C. glandulosa* are very early.

THE EDITOR'S TOUR*.

August 12 to September 1.—*Edinburgh.*—The morning after we arrived in Edinburgh, Mr. Loudon left me to go to Stranraer, and during his absence I saw very few gardens. The first I visited during this interval was Handyside's Nursery at Musselburgh, where I was very much pleased with the mode of training dahlias by tying them when young to five stakes, and thus opening the plant, so as to admit the influence of the sun and air to every part. The consequence of this treatment is that the plants are not only more vigorous and produce a much finer show of flowers, but that they are much better shaped, having a bushy and compact appearance, instead of the long, untidy stalks, so frequently seen in this plant. In Mr. Handyside's nursery the stakes were perhaps a little too conspicuous; but this might be easily avoided in ornamental plantations. The next day I visited Mr. Handyside's Glen Nursery, one of the most romantic spots that can be conceived. The nursery is laid out on both sides of a glen, sloping down to one of those beautifully clear, romantic streams, so common in Scotland, and so rare everywhere else. In this nursery there was every possible diversity of soil and situation, with a fine warm bank, on which I found a great variety of annuals, which are grown for seed for the London market.

Mr. Handyside's house was a fairy-like pavilion, looking down on the stream; and near it was a large elder, taking quite the character of a tree, and a beautiful hawthorn with weeping boughs. Mr. Handyside told me that he intends planting a miniature arboretum on the sides of the glen.

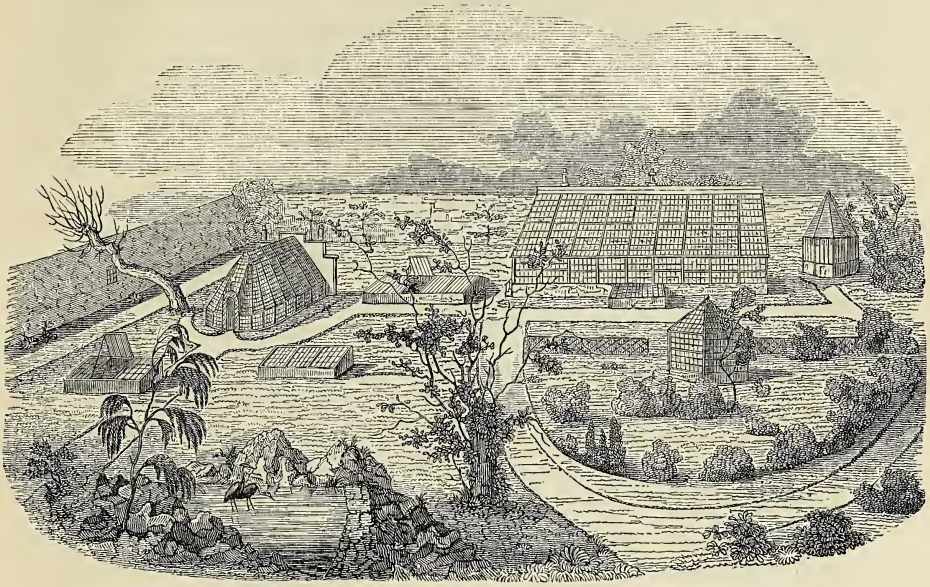
Olive Bank, the seat of J. B. Gracie, Esq., is also at Musselburgh, and it is interesting from the great care with which it is kept. There is an undergrowth of rhododendrons, which produces a very pretty effect, and some good greenhouses and vineries, in which I saw several seedling Camellias, and hybrids of *Mimulus cardinalis* and *M. roseus*. Mr. Gracie has also raised several seedling dahlias, one of which was a curious mixture of yellow and crimson.

Dr. Neill's garden at Canon Mills, Edinburgh, is a proof of how much may be done in a small place. There are wood and water, rockwork, hothouse, greenhouse, and in short every thing that could be desired in the most extensive grounds. (See *fig.* 83.) In the stove is a large cinnamon-tree, which has flowered and ripened seed from which young plants have been raised, large specimens of the pitcher plant, *Nepenthes dis-*

* Continued from p. 325, and concluded.

tillatoria, from which young plants have been raised, and the mahogany-tree, with many others. Besides the plants, the garden of Dr. Neill is

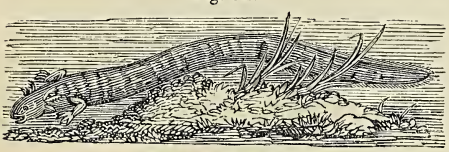
Fig. 83.



THE GARDEN AT CANON MILLS COTTAGE.

interesting, from the number of rare animals it contains: there are several parrots, an eagle, and many other birds. A few years ago there was a specimen of the *Siren lacertina* (see *fig.* 84), which was the only one in Europe. This creature, which is a native of the marshes of South Carolina, lived six years in Dr. Neill's stoves. There was also a specimen of the green tree-frog of Germany, which fixes one foot firmly on the branch of a tree, while it darts forward in chase of the flies and other insects that form its food, (we had one of these creatures at Bayswater for several years); and, lastly, there are several specimens of gulls and herons, which are suffered to wander as they please about the place.

Fig. 84.



SIREN LACERTINA.

The experimental garden at Inverleith I also visited; and I was very much delighted with the admirable care with which it is kept by Mr. James M'Nab. Mr. M'Nab has a cultivated and vigorous mind; and he has not only had the advantage of travelling in America and on the

Continent, but he has profited by all he has seen. The plants in the garden are looking very well, and there is a miniature *Pinetum*, with a splendid *Araucaria imbricata*, and a very beautiful Deodar Cedar.

September 1.—*Edinburgh.*—After Mr. Loudon's return, we visited Mr. Lawson's Museum, which differs from that of Messrs. Drummond at Stirling, in not containing real implements, but only models. There were, however, very interesting specimens of wood, tree seeds, different kinds of grass and corn and their seeds, and other kinds of agricultural produce; and in another room, a collection of geological specimens, and a model of Arthur's Seat, Salisbury Crags, &c. There was also a small greenhouse, with a collection of pines and firs, in tubs.

September 2.—*Horticultural Exhibition.*—The principal plants that struck me in this exhibition were the specimens exhibited of *Lisianthus Russelianus*, which were handsomer and better grown than any I had ever seen in England. It seems to be a favourite plant in Scotland; and I saw there a great many varieties, some of which had very large flowers, and all were flowering abundantly in greenhouse heat. After seeing the Exhibition, we walked through the garden, and examined some experiments which had been tried on the peach-tree, by placing the branches at different distances from the wall, to see at which they would flower first; when it was found that the earliest blossoms opened at the distance of six inches. Dark walls and light walls were also tried, when it was found that the former had the advantage by ten days. There were also some curious experiments which had been tried with inarching. We then proceeded to the Botanic Garden, where we saw a very large Bread fruit-tree, a large Jack tree, and the largest Camphor tree I ever saw. The heaths in this garden have long been celebrated; and I found them quite equal to my expectations.

September 3.—*Lawson's Nursery.*—Here we saw a great many interesting plants, particularly *Lilium eximium*, flowering splendidly in the open air. There were several new oaks, a beautiful maple, called *Acer colchicum*, with very thin leaves on long petioles, so as to quiver like the aspen poplar; and the Washington thorn (*Cratægus cordata*), which in mild winters retains its leaves all the year. Moss-roses are cultivated here on a large scale, and there was one with mossy leaves, which I had never seen before. We saw also some young *Arbor vitæ* plants, which had exactly the appearance, in the seed-bed, of Junipers. Mr. Lawson told us that the weeping elm, which we found in great abundance in the Scotch gardens, was found wild in the woods of Camperdown, near Dundee. In two beds close to each other, were *Pentstemon gentianoides coccinea*, and *P. G. fruticosa*, which we had heard frequently asserted

were the same. Here, however, the difference between them was obvious, *P. G. fruticosa* having a smaller and more crimson flower, quite white inside the throat. There was a very handsome, purple-leaved variety of the common Barberry; and a splendid plant of *Solanum crispum*, covering the end of a hothouse and shed, with a stem six inches in circumference. The Zoological Gardens at Edinburgh, which we next visited, are very inferior to those in London, from their small size, from the want of trees and shrubs, and from the omission in most cases of the names of the animals. At Messrs. James Dickson and Son's Nursery at Inverleith, I was delighted to see an immense stock of seedling pitcher plants. Some quite small, and others of various sizes, with their curious little pitchers as perfectly formed as those of the large plants. In the rockwork was a large specimen of a tree dug out of a bog in Ireland, part of which was completely stone, and part sufficiently soft to enable us to cut a portion of the bark. There were some very interesting plants in the greenhouses, and particularly some fine heaths.

September 10.—*Dalmeny Park.*—Earl of Roseberry. The approach is somewhat narrow, and shaded with trees, till it opens suddenly on a magnificent view of the sea, with the ruins of the old Castle standing on a point of rock washed by the waves. The modern house is farther from the sea, and much less picturesque. In the kitchen-garden was an excellent crop of cherries, which the gardener told us he contrived to supply for the table from the beginning of June to the middle of November; the walls are flued, and so contrived as to be easily covered with bunting. The Port Famine Fuchsia (*F. discolor*) was here, as in many other Scotch gardens, remarkably fine, being about five feet high, and forming a bush at least six feet in diameter. This is found the hardiest of all the Fuchsias in Scotland, and the most abundant flowerer.

When we left for Queensferry we passed the old house in ruins, with the garden enclosed by a balustrade, and planted with some fine old trees, elms, sycamores, and ashes.

Hopetoun House.—On the road to this splendid mansion, we passed the ruins of a fine old monastery called West Kirk, the burial-place of the Dundas family. The entrance front of Hopetoun House is very fine; and the views from the grounds extremely beautiful. There are some magnificent trees, particularly the cedars, which are said to be the finest in Scotland. I was unfortunately, however, too ill with a violent headache to be able to see the grounds.

Dundas Castle is a very fine place; but the same cause that prevented me from seeing the grounds at Hopetoun, did not permit me to see the flower-garden, which I had heard very highly praised.

September 11th.—*Edinburgh to Roslin Castle.*—This far-famed place we found, contrary to what is generally the case, far superior to what we expected. The chapel is as beautifully kept as Melrose Abbey, and nothing can be finer than the dell leading up to the castle, which is looked down upon from the windows of the building. In the garden of the castle we saw two yellow rose-trees (*R. sulphurea*), and there is a legend that the Earl of Roslin is bound to present yellow roses to any British sovereign who may chance to visit Scotland.

September 12.—*Duddingstone House.*—Sir Adam Hay. All the ponds for which this place was once celebrated are now filled up, except one. The trees in the park are very fine; and those that stand singly are nearly twice the size, and certainly very superior in beauty to the others in clumps, which were planted at the same time. I was very much pleased with Lady Hay's flower-garden, the gravel walks in which are said to be laid on mortar; and, at any rate, they have been laid with Kensington gravel, brought to Scotland at a very great expense, and they are as fine and hard as the finest macadamised road.

September 13.—*Edinburgh to Haddington.*—Our road lay through Musselburgh, along the sea-coast, to Gosford House, the seat of the Earl of Wemyss. The plantations here, which face the sea, are cut as if with a knife, sloping from the breeze. All the pine and fir tribe seem to have suffered severely; some kinds of Pyrus not so much; and the Sea Buck-thorn (*Hippophae rhamnoides*) not at all. The grand feature of the grounds at Gosford is a succession of ponds, surrounded by wood, so as to give an idea of inland scenery, and to shut out the sea entirely. Some years ago a magnificent new house was erected at this place; but, though it has not been completed ten years, it is deserted, and is fast falling to decay, being uninhabitable from the damp caused, as it is said, by the using sea-sand in the mortar. When we entered it, it was like going into a vault, from the chillness that hung about it, though the day was fine and dry. There is a very fine collection of paintings in the old house.

September 15.—On this day we saw Whittingham, a fine place, beautifully kept; Biel, remarkable for its fine terrace gardens; Smeaton; and Tyningham, so justly celebrated for its fine woods. It was quite dark when we left the latter place; and it was only by the aid of a guide, on foot, carrying a lantern, that we were enabled to reach the road in safety. Our horses could only proceed at a foot-pace; and I think I never saw anything more striking than the gigantic trunks of the lofty trees we were passing through, strongly lighted as they were, by the reflection of the lantern, while their summits were lost in gloom.

September 16.—*Dunbar.*—We passed the morning most agreeably,

wandering on the rocky coast of Dunbar, and examining the ruins of the old castle, part of which is still as strong as the rock on which it stands, notwithstanding the great length of time to which it has been exposed to the fury of the German Ocean. After satisfying our curiosity here, and seeing the process of drying and smoking herrings, &c., we proceeded to Dunglass, the seat of Sir James Hall, where unfortunately we arrived during a thunder-storm, which prevented our seeing any part of the grounds but a most romantic bridge.

September 17.—*Berwick.*—We here saw the building erected for the great cattle show, which was to be held the following week. We then crossed the border, and had scarcely entered England when we arrived at one of the best-kept places we saw during our whole tour. This was Haggerston, the seat of Lady Mary Stanley. In this garden there was a peach wall, 300 feet long; in front of which was a bed, or rather border, planted with pelargoniums, in quincunx; so arranged, as to colour, as to produce a splendid effect. The plants were about five feet apart every way, and they were so treated as to make very handsome bushes. I never saw a flower border that I liked better than this. The regular distances that the plants were from each other, their uniform size, and their admirable arrangement in respect to colour, made this border as perfect as anything of the kind can be well imagined. The flower-beds on the lawn were all in circles, and I was quite delighted with the effect they produced. When a flower-garden is laid out in a regular figure, there can be only one or two points of view from which it can be seen to advantage; and, when seen in some directions, the figures, from being thrown into perspective, appear quite distorted. This can never be the case when the figures are all of the same form, at least if they are either in ovals or circles. Circles in particular can never be thrown into any distorted form by the perspective, and consequently they look well from whatever point they may be seen. After leaving Haggerston we proceeded to Alnwick, where we arrived just as it was dark, and we were much struck by the fine effect of the castle, with its outline only rendered visible by the lights of the town over which it seemed to be dimly frowning.

September 18.—*Alnwick.*—I did not think the effect of Alnwick Castle so good by daylight as it had seemed the night before. The hundred and fourteen Norman figures on the walls had a paltry and puppet-show effect, strikingly incongruous with the bold outline of the castle itself, and its fine situation commanding the beautiful valley of the Alne. When seen from the bridge, these figures look like real soldiers, dressed up in ancient armour; and, had they been in a Catholic country, they would be just what one would expect in carnival time. The rooms

in the castle also were fitted up in the Batty Langley gothic of about a hundred years ago, so that there was nothing in them to carry the imagination back to the days of the Percy of Chevy Chase. The walls were, however, interesting, with the armoury containing arms for the retainers of the family; but even this armoury was not permitted to carry the imagination back to the old times of the feudal grandeur of the Percy race; as it was disfigured by some canoes and Indian arms from New Zealand, which the porter showed off much in the same style as Mr. Catlin does his Indian relics in the Egyptian Hall, Pall Mall. After seeing the grounds near the castle, we took a drive through the beautiful woods on the other side of the turnpike-road, to see the Duchess's dairy, the Prospect Tower, and, above all, the romantic ruins of Hulne Abbey. The river winds so much in passing through these woods, and the drives are so contrived, as to afford a series of most beautiful views, which succeed each other in such a manner as to produce a constant variety.

September 19.—*Alnwick to Newcastle, through Morpeth.*—On the route, we only saw one place, viz. Blagdon House, the seat of Sir Matthew White Ridley, the grounds of which are flat and without any distant view.

September 20.—*Newcastle.*—The most remarkable place I saw at Newcastle was the library of our friend Mr. Sopwith, at whose house we were staying. In this room every table, chest, and cabinet, has its secret drawers, which spring open at a touch, replete with everything that can be wanted even by the most fastidious writer or artist. This room is the very temple of order, and the immense quantity of mineralogical specimens, drawings, and other treasures it contains, bids defiance to all ordinary powers of description. In one of the cabinets were a number of keys hung up, with engraved ivory labels attached to each; this was pointed out to my attention, but, as I had seen things of the kind before, I took little notice of it, till I was told to take off one of the keys, and to close the cabinet door; when, to my great amusement, I saw an ivory label, containing the name of the missing key, push itself out, and remain staring me in the face, till I restored the key to its place, when the label instantly disappeared. I cannot conceive a better plan for shaming a careless person into order.

September 21.—*Gibside.*—This is a fine old place, laid out in the Louis Quatorze style, with long avenues of the kind called the *patte-d'oie*, or goose's-foot; that is, all proceeding from one point, and spreading out in different directions, like the radii of a semicircle, each ending in a temple, or obelisk, &c. There is here a column 140 feet high, with a statue of Liberty on the top, 12 feet high; and a fine terrace walk, leading

from it to the chapel, above a mile long, and 90 feet wide. The chapel is an elegant building, and very ornamental from several points of view. The kitchen-garden is quite in the old style, with grass walks, which have remained undisturbed for above a hundred and fifty years. The river Tyne has a fine effect from several parts of the grounds.

The Gateshead Nursery, which we saw on our road back to Newcastle, was very clean, and contained some good specimens of plants.

September 22.—*Ravensworth Castle*, which was the first place we visited after quitting Newcastle, was one of the very finest places we saw during our whole tour. The castle has been lately rebuilt from the designs of one of his lordship's sons, the Hon. Thomas Liddell; and it is in the very purest Gothic. Nothing can be more beautiful than the interior of the library, and the picture gallery; the latter of which is lighted by cusp windows in the roof. The same artistical feeling is shown in the grounds; the flowers on the garden front are so arranged as to harmonise beautifully with the castle, and the planting is so contrived as to leave an uninterrupted view from the windows, without there being any appearance of an intentional opening. In the grounds the gardens are laid out with the same view; and throughout the whole place art has been called in to aid nature in the most able manner. I was particularly pleased with the winter walk, and the holly wood; two scenes, both displaying the greatest taste, though widely different from each other. The trees in the park were uncommonly fine, Lord Ravensworth being one of the very few landed proprietors of this country who has long practised, and perfectly understands the advantage of judicious and early thinning. In the course of our tour we had seen so many examples of the evil effects of neglecting thinning altogether, or at least of not practising it till too late, that I am happy in being able to record the name of one nobleman who has had the courage to cut down his trees at the exact time when it was most advantageous to do so. Among the other interesting trees at Ravensworth are some old cedars, growing in what was once the kitchen-garden; which look as though a few seeds had been sown in a seed-bed, and the plants they produced left to take their chance. These cedars are evidently very old, and as even their position possesses a degree of interest, from the light it appears to throw on their origin, they are suffered to remain exactly in their original state.

Lambton Castle is a modern building, placed in a very fine situation, with a noble terrace looking down on the river. The view from this terrace is magnificent. The house is good, but it contains nothing remarkable; and the kitchen-garden is decidedly bad, being placed in the very worst situation for such a garden in the whole domain.

Lumley Castle, the ancient seat of the Earls of Scarborough, is now uninhabited; but it is in a most commanding situation, and it might easily be made one of the finest residences in the country.

September 23.—*Chester le Street*—where we passed the night in a curious old town, remarkable for its ancient church, with its aisle of tombs, each ornamented with a stone effigy of one of the ancient Barons Lumley, from the Conquest to the first Earl of Scarborough, who died in the reign of Elizabeth. We afterwards proceeded to a beautiful modern villa, called the Hermitage, with a very fine glen. This place has great natural advantages; and it might be very greatly improved, and indeed rendered one of the finest places in the county, by the aid of a little art judiciously applied. At this place the natural beauties of the glen on the one hand, and Lumley Castle on the other, supply everything that can be desired in the way of prospect.

Durham.—The finest view we obtained of the Castle and Cathedral of this ancient city enchanted me, and I was still more delighted on taking a nearer view. We left the carriage at the bridge, and proceeded along a terrace walk cut in the rock, and looking down upon the river, with the castle and the beautiful cathedral towering above our heads, and a fine wooded bank interspersed with villas on the opposite side. After pursuing this walk till we reached a second bridge, we turned towards the town, and passing along a steep and narrow street, we entered through an ancient gateway, into a square, in the centre of which was an ornamental conduit. Turning to the right from this, we entered some ancient cloisters, round which we walked, and saw through some iron bars the interior of the cathedral. Not satisfied with this view, however, we proceeded to the regular entrance, and carefully examined every part of this superb edifice; visiting, particularly, our Lady's Chapel or Galilee, and venturing to overstep the line traced by the ungallant St. Cuthbert, in the body of the cathedral itself, beyond which, in ancient times, it is said, no woman was permitted to advance. After seeing the cathedral, we proceeded to the castle, where we saw the coffin of St. Cuthbert, looking very much like an old chest for sacramental plate; and a very curious old Saxon gallery, which was discovered a year or two ago, plastered up on both sides, in the centre of what appeared to be only an immensely thick wall. As several of the partition walls of the castle still appear of enormous thickness, it is very probable that if their outer covering were removed, many other interesting remains of antiquity would be discovered.

Sherburne Hospital is a quadrangular building, forming a kind of college for a number of old men. There is a very pretty chapel and burying-

place, laid out as a kind of garden; and a square green in the centre.

September 24.—*Castle Eden.*—Of this place I can say nothing from my own observation; as from the unfavourable state of the weather I remained at the inn, while Mr. Loudon went through the grounds. From what I heard, however, the place appears to be one which is still celebrated, only because it deserved to be so fifty years ago. At present, however, it seems to possess few remains of its former beauty. We returned to Durham in the evening.

September 25.—*Durham to Brancepeth Castle.*—This fine castle, though a modern building, appeared to be in excellent taste; and in a few years it will have all the appearance of an ancient castle. The outline, with its towers and battlements, is bold and simple; and the open court inclosed within the walls is just what one would expect in a baronial residence. The interior corresponds well with the exterior; the apartments are large and well-proportioned, and the furniture though massive is almost too simple, as in some of the apartments there is almost an air of nakedness, though it would be difficult to say what is wanting. The garden is very good, and the gardener's house is elegant. On entering it, we were struck with the appearance of a circular hall, filled with stuffed birds and beasts in life-like attitudes, very different from the stiff unnatural figures so often seen in museums. We inquired who had stuffed them, and were surprised to hear it was Mr. Joseph Dale, the gardener's son.

Croxdale, is the seat of —— Salvin, Esq. I do not know that I ever felt more regret at the weather, which so frequently marred our projects, than I did at the heavy rain which prevented me from exploring this beautiful and romantic place; but I was obliged to let Mr. Loudon go through it alone; and I could only judge, from an occasional glimpse of the scenery from the windows of the house, of what I lost. Notwithstanding the storm, Mr. L. returned quite delighted with what he had seen, and gave me such an account of the romantic dale or rather glen (which tradition says was formerly the abode of evil spirits, till they were driven forth by the erection of the cross, from which the place takes its name), and of various other parts of the grounds, that I can only hope it may be my fate to revisit Croxdale at some more favourable opportunity.

Bishop Auckland.—The storm ceased, and a gleam of sunshine broke through the clouds as we drove through the noble park of Bishop Auckland. Among the fine old thorns was one quite fastigiate, which raised its tall and slender form high above the rest. Near this we saw a pyramid, which we found on inquiry was raised over a place where the keeper concealed himself when the time came for shooting deer. The

park was well watered and well wooded, and presented a great variety of scenery. On a hill stood a building which looked like a large riding-house, except that it was surrounded with open arches. This, we afterwards found, was a deer-house, with racks under the arcade, which extended all round the building, and a partially enclosed place in the centre, in which was a hayrick. The whole was covered with a dome-like roof, and we were told it was intended as a place for food and shelter for the deer in severe weather. The old house, we were told, was taken down by the late bishop, and the materials sold to prevent dilapidation expenses. The appearance of the modern mansion is very elegant, and there is a screen before it like that at Abbotsford. The chapel is very fine, with a splendid ceiling. There is a conservatory, with a flower-garden in front, a kitchen-garden on a steep slope, and a bowling-green with an elevated terrace round it. From the dampness of the situation, there is a great deal of moss among the grass, which is destroyed by watering it with a strong decoction of blue limestone; and the grass in the gravel walks is destroyed by a solution of salt, and women weeders. The place is in good keeping, trees being cut down here and there to admit views. Among the remarkable trees in the park are those called the seven oaks, which were favourites of Bishop Barrington. The town is close to the palace, and the entrance gate to the latter, which has an arch with a clock tower over it, opens into the principal street of the town.

September 26.—*Raby Castle.*—We drove into the castle and through the great hall the previous night, though it was too dark to see the house. I was very much delighted with the effect of the horses' hoofs on the stone pavement, echoed as they were by the lofty dome; and when the folding-doors were closed, leaving the carriage in the hall, the sensation was more extraordinary than I can describe. On each side of the great hall is a flight of steps, leading to a door hung with drapery, and that on the right leads to the dwelling rooms. When we ascended the steps we were ushered into a saloon, whence we proceeded through a great number of rooms, fitted up with great splendour but in a most barbarous taste. Some of the rooms were entirely Chinese; and the absurdity of this in a real baronial castle needs no comment. The housekeeper told us that there are a hundred and fifty habitable rooms, and I have no doubt she spoke the truth. The Prince of Wales's bed-room was very pretty, with the drapery extending from the bed on each side as far as the side walls, so as to make two curtained recesses. I had heard a great deal of the Baron's hall, but I was disappointed to find it up-stairs. It is ninety feet long, thirty-six feet wide, and thirty-six feet high, and it is now

used as a museum, containing nothing to distinguish it from other similar collections, except some chairs of Henry II. The kitchen appeared to me the most interesting part of Raby Castle, next to the great hall. It was very large, and of immense height, with a cupola, terminating in a funnel-shaped opening in the centre; as if, in the times when bullocks were roasted whole, it had been intended to let out the steam. About fifteen feet or twenty feet from the ground were the windows, with a singular passage leading past them cut in the thickness of the wall, and with ledges like steps in front of each window. This passage led entirely round the kitchen, and it was about half way between the ground and the roof.

There was very little at Raby to admire in the way of gardening. There is no flower-garden near the house, no pleasure-ground, and no shrubbery. There is a walled kitchen-garden, with some old hothouses, and a few flowers in it; but this is all. The park contains a great number of trees, but they are ruined for want of thinning, being all drawn up like gigantic hop-poles, rather than serviceable timber-trees. In proceeding from Raby Castle to Darlington, we passed through a fine country, beautifully watered by the river Tees; and at Darlington we took the railroad to York.

September 27.—*York.*—After visiting the Minster, which certainly did not equal my expectations, we went out to Escrike Park, the seat of Lord Wenlock. Here we found a flower-garden very neatly kept; and some rockwork, among which was part of the screen of York Minster, which was removed at the time of the fire. On the terrace in front of the Conservatory, were pots filled alternately with *Lobelia fulgens*, and *Campanula pyramidalis*, of the same height, and trained exactly in the same way. The effect was very good, as was also a mixture of *Tropæolum peregrinum*, and *Loasa aurantiaca*, trained over the rockwork.

Moorby Hall. The seat of —— Preston, Esq.—This is an uncommonly fine place; with a terraced garden, architectural greenhouse, and conservatory, laid out and designed by Mr. Burr, the gardener. The lower garden has a stone basket in the centre, with a parterre of embroidery, planted with violets and hepaticas at the side. Part of the garden is laid out in green terraces, to correspond with the grand stone terraces near the house; and the whole is in admirable taste, and reflects great credit on Mr. Burr, the gardener. Yews and other trees have been planted, to be hereafter clipped into shape, and the whole has a splendid effect in the old English style. The trees when planted are wrapped up in straw ropes, which are wound round all the principal branches, to prevent them from suffering while in the weak state, attendant on removal

from sudden changes of temperature. The house is a very good one, and it is fitted up with more attention to comfort than most others that we have seen. The library in particular was a delightful room.

September 28.—*Yorkshire Museum.*—The building is placed in the grounds belonging to the fine ruins of St. Mary's Abbey, and these grounds are laid out as a botanic garden. Among the plants, which were all named, was a fine specimen of *Lupinus arboreus*, with a branching stem nearly six feet high; and another of *Lupinus polyphyllus*, which had young shoots opening instead of pods on the flower-stem.

Backhouse's Nursery. Here was a large stock of the beautiful *Helichrysum retortum*, *Dimorphotheca* (*Calendula*) *graminifolia*, and *Chrysanthemum atratum* (the *Helichrysum* having been imported from South Africa by Mr. James Backhouse), and many other interesting plants.

The Cemetery at York has too much the appearance of a garden. There is an avenue of lime-trees, and the groves are planted with flowers. There was a fine terrace along the upper end, which was ascended by three flights of four steps, each flight being cut out of a single stone.

September 30.—Returned from York to London by railroad.

ON DESTROYING CATERPILLARS ON ROSE-TREES, GOOSEBERRY BUSHES, AND OTHER PLANTS.

BY MR. SCHLENTHER, NURSERYMAN IN TILSIL.

(*Translated from the Garten Zeitung.*)

At the time when the buds are just unfolding themselves on the rose-trees, a number of small green caterpillars generally make their appearance, and begin to eat the small buds. I immediately make a strong decoction of common tobacco-leaves; I let it get quite cool, and, when the dew has completely evaporated, I sprinkle the tree all over every morning, by means of a watering-pot with the rose on, till every part is thoroughly embued with it. I continue this operation three or four days in succession; and, should rain come on about the time of sprinkling, so that the liquid is washed away, as soon as the foliage is dry the sprinkling must again be repeated. It will soon be found that the caterpillars will all disappear, and the undisturbed buds will then unfold themselves. I have practised this method for several years with the greatest success, and never indeed found it to fail; so much so, that even buds that were pretty far advanced and almost eaten through by the caterpillars, soon began to unfold the remaining mutilated parts.

ON HELICHRYSUM RETORTUM.

BY MR. JAMES BACKHOUSE, YORK.

Helichrysum retortum was gathered at Camp's Bay, near Cape Town; where, at the back of Lion's Hill and Table Mountain, it grows, prostrate in the sand, behind some large rocks of granite that receive the shock of the sea; and where, among the adjacent sand-hills, *Ferraria undulata*, *Chironia fruticosa*, and several other interesting plants are met with. In some of the specimens of *H. retortum* the external colour of the flower is brown, instead of the purplish tinge which is most common. This plant is said by Aiton, in the *Hortus Kewensis*, to have been cultivated in 1732 by James Sherard, M.D.; but it seems long since to have disappeared from our gardens.

York,
September 29th, 1841.

ON THE CULTIVATION OF THE CAMELLIA IN THE PARLOUR OR DRAWING-ROOM.

BY DR. J. S. GUNNELL, WASHINGTON, D. C.

(*From the American Gardeners' Magazine.*)

I HAVE had about ten years' experience in raising camellias in a common sitting-room or parlour, during which time I have tried various plans of cultivation, some to the advantage of the plants, and others to their injury; but the plan which has succeeded best with me is the following:—I had three *benches or tables*, made about *five feet long, and three feet three inches wide*, with strips around the edges, so as to be about a third of an inch above the edges of the benches all round, and then common (sawed) laths cut into short pieces, and placed about two inches apart on the top surface of the benches or tables, so that the water which ran from the flower-pots could pass from one part of the benches to another, crossways or lengthways, and pass out at a notch in the edging around the benches spoken of above; by which means the pots would not stand in the water that runs from the pots to the benches.

Those benches I placed far enough from the windows and walls, or partitions, to allow a grown person to pass all round between the windows, and wall, and benches, and to water and syringe the plants, which made a space of about one and a half or two feet in front and at the ends.

The benches should be of a height in proportion to the windows, so as to let the sun shine on the edge of the top of the benches nearest to the

windows. The windows should be made to let down from the top, by which means the plants could have air let in upon them, without a strong current passing through them or upon them. This I consider a very important matter, as a strong draught or current of air is very injurious, both to the vegetable and animal creation.

I first used wood fire, then Lehigh coal in grates, and finally Lehigh coal, or anthracite coal, in a stove; but I greatly prefer the stove, as it keeps a more uniform heat, creates less dust, and I could frequently keep the passage and partition doors open, to assist in airing the plants.

The plants in rooms should be watered more frequently than in greenhouses, and they should be syringed over the tops *every evening*, about sunset, in dry weather, and twice or thrice a week in wet weather. The syringing will not injure the carpet upon the floor, if the water is wiped up immediately after the drip ceases to fall from the leaves: a dark carpet soils less than a light-coloured one, if not well wiped up.

The camellias that bloom best in parlours are those that have a green calyx or buds; those that have a dark calyx or buds are the most difficult to make flower.

I have bloomed in a parlour, by the above plan, all of the most difficult-flowering camellias that are grown in this country, though not so finely as they are bloomed in greenhouses; but those that have a green calyx, as before remarked, will bloom nearly as well as in greenhouses, and will seed much more freely in a dry heat.

The camellias that I would recommend as the best to flower in parlours are the following:—*Camellia coccinea*, or *splendens*, *Coningtoni*, *variegata*, *Pomponia*, *Pæoniflora*, *nivalis*, *excelsa*, *Sabini*, *conchiflora alba*, *Derbyana*, *rubricaulis*, *Parksii*, *conchiflora*, *Laura Coates*, including all that are semi-double, with about fifteen or twenty petals, and that have a green calyx, and all the single varieties.

The plants should have air, by letting down the top sash whenever the weather is mild, or when there is no frost in the atmosphere, for a short time, though it may be cool. The camellias require a great quantity of air: they will bloom in a room where the heat varies from thirty-five to fifty degrees; but will bear a much greater heat and bloom well, and on some occasions they will flower, even though the earth on the top of the pot has been slightly frozen; but extremes, either of heat or cold, are bad for them.

I have had camellias bloom finely on the benches, as above, where the sun did not shine on them; but, in such cases, they should have a great quantity of light.

The syringe that I use is made of brass; and, when properly used and

kept in good order, any individual may syringe the foliage of the plants, and let but little water fall upon the carpet or floor. The wider the benches, the better you can protect the carpet from water. Where a person has but few plants, they might be watered over their tops with a watering-pot with a rose on it, by laying each plant on its side, so as to keep from wetting the earth in the pot too much; this could be done in a large tub, or on a kitchen floor.

I generally use water for my plants, both winter and summer, directly from the pump; though probably it would be better if it was warmed to the same temperature of the room, in winter.

As to general watering of the flower-pots, I think it best, whenever the top earth begins to get dry, to water well and freely, so that the water may pass to the bottom roots, and to repeat the watering when the surface begins to get dry again: when the camellias are blooming or growing, they require more watering than at any other time.

The number and size of the benches or tables should be in proportion to the quantity of plants the individual has to winter: they should not be crowded.

In the spring of the year the sun will shine so powerfully as to injure and disfigure the foliage of the camellias by scorching it by its intense rays. In such cases, the window-glass should be washed over, (or made dim,) by the application of common whiting and water, or a thin muslin curtain should be hung over the window, to protect the foliage of the plants from the scorching rays of the noonday sun; though this caution will not generally be necessary, except where the windows are on the south side of the house.

I have cultivated camellias by the above plan, in such a manner as would do credit to most greenhouses, or their cultivators; and I am also led to the conclusion, from experience, that camellias are easier cultivated than most other plants.

If you deem this hasty sketch of sufficient importance, you may publish it in your valuable *Magazine*.

Respectfully yours,

J. S. Gunnell.

Washington, D. C.
April, 1841.

[As in the above paper the writer mentions that he uses water for his camellias, taken directly from the pump, it appears necessary to add, that this should never be done if it can be avoided; as pump water is not only colder, but is less suitable for the nourishment of plants, than water which has been exposed to the air.]

ON THE CULTURE OF ROSES.

BY THE EDITOR.

(*Concluded from p.* 330.)

THE principal half-hardy roses cultivated in the open air in British gardens are the China, the tea-scented, the Noisette, and Bourbon roses; and the hybrids between these and the common kinds. These hybrids seed freely; and, as they are continually being crossed and re-crossed with each other, it is very difficult to give any kind of classification of them. Of the original kinds the China roses are perhaps the most vigorous, and they are certainly the most abundant flowerers. The tea-scented roses are known by their drooping flowers, the petals of which are somewhat large and loosely set on; the Noisette by their clusters of small roses, produced at the extremity of the shoots; and the Bourbon roses by their petals being roundish, and somewhat darker inside the cup than on the outside. All these roses should not be pruned otherwise than to remove the dead wood; as, if they are cut like the common roses, they will produce only leaves and shoots, and will not form blossom buds. Any one may be convinced of this by pruning every autumn one of two Noisette roses, the other circumstances of which are the same, and leaving the other to nature. In two or three years the pruned rose will have attained a large size, growing luxuriantly, but not showing a single bud; while the other will have the tip of every shoot crowned with flowers. All these half-hardy roses should be mulched during winter; that is, manure should be laid on the surface of the soil in autumn, and covered with straw or dead leaves; and again in spring, when it may be covered with moss. By this practice the roots are kept near the surface, so as to be within reach of the air, without which the sap will not possess the qualities necessary for enabling it to produce roots. When these roses are wanted for pillars or pyramids, a pit should be dug, four feet in diameter, and about two feet deep. This should be filled with a compost of loam and rotten manure, raised about two feet above the surface, in which the rose-tree should be planted. Thus treated, and frequently watered, the plant will make shoots eight or ten feet long the first season. The dark crimson China rose (*Rosa semperflorens*) is much more delicate than the common China. Its shoots are weaker and more slender, and it is more apt to damp off. All these roses are indeed very easily affected by damp; and when the soil in which they are to be grown is moist, they should have a pit or border prepared for them, with a layer of brickbats, &c., at least nine inches deep, under the compost. Tea-scented roses generally

require protection during winter, or they may be taken up, and laid with the roots in damp mould, in a shed, or some other sheltered place, till spring.

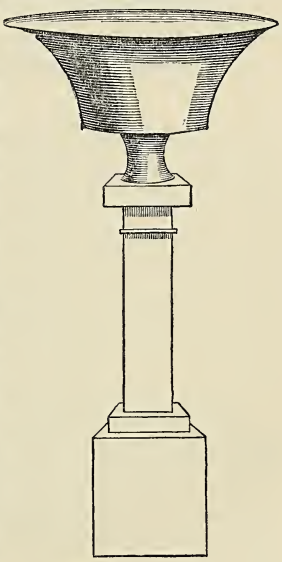
The Musk rose (*Rosa moschata*) is a very delicate and finely-scented rose, which seldom succeeds in this country unless it be planted against a wall; and in cold climates it should be protected during winter, keeping on the covering at night, even in spring, if frost be apprehended. The Macartney rose (*Rosa bracteata*) and *Rosa microphylla* are evergreen roses, which also require protection during winter. The handsomest half-hardy climbing roses are *Rosa Banksiana*, the white and the buff, which are so double as to look like bunches of the double-blossomed cherry.

BARK FLOWER-VASES AND STANDS.

BY J. A. P.

As this is a season when gardeners have comparatively little to do, it is advisable to point out any useful occupation that they can pursue within doors. One of these is making bark vases for stands of flowers. The pedestal of fig. 85 may be made by any common carpenter, by sawing pieces of wood into the necessary shapes, and then nailing them together; while a wooden bowl may be turned for the vase at the top. When the shape is made, the bark may be fitted up so as to cover it entirely, fastening it down with the small headless nails called brads. Fig. 86 is another shape to which handles are appended; and fig. 87 has a fluted stand. The covering to these may be varied at pleasure; and moss may be used instead of bark, keeping it on by packthread twined round the different parts. Sometimes pine cones are used as an edging; either applied regularly all round, or at intervals, as shown in fig. 87. Old rope also may be twined round baskets of this kind, so as to produce a good effect; but when this is done the rope should be tarred or painted, to prevent it from decaying with the wet. This is not necessary when bark is used, as that is less liable to decay than any other vegetable substance, from the astringent quality it possesses. Birch bark in particular will exist an extraordinary length of time uninjured; and in

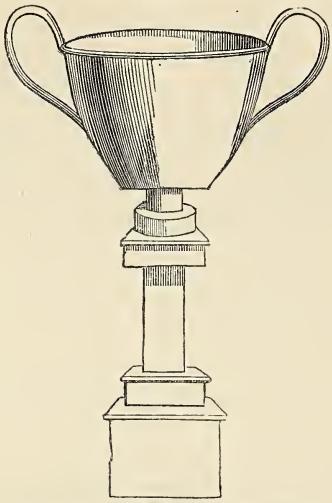
Fig. 85.



BARK FLOWER-VASE.

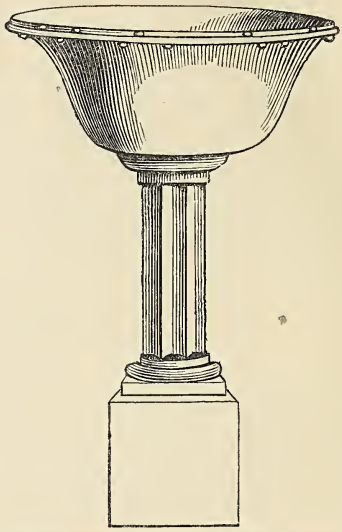
the American woods the bark of birch trees has been found quite undecayed where the wood of the tree enclosed in the bark was quite

Fig. 86.



BARK FLOWER-VASE WITH HANDLES.

Fig. 87.



BARK FLOWER-VASE WITH FLUTED PILLAR.

rotten. Rope, on the contrary, very soon becomes rotten if exposed to the action of the atmosphere without protection.

ESSAYS ON ORNITHOLOGY.

BY MR. MAIN.

(*Concluded from page* 300.)

Among the birds most common in gardens, may be considered all the species belonging to the genus Fringilla; as they are found generally to build in fruit-trees, or in some similar situation. This genus also includes a number of birds, known under their English names to every observer of nature.

The Chaffinch (*F. cœlebs*) was called the bachelor bird by Linnæus, because during the winter the males of this species, known by their pink breasts, are found flocking together, without a single brown-breasted female among them. The females are supposed to migrate in November; but whether this be the case or not, they are never seen during winter, except in small groups, and always apart from the males. They begin to pair in February or March, and the female takes more pains in the fabri-

cation of her nest than any other bird we know. Although she often builds among the thick branches of a bush, her favourite place is a cavity, or cleft in the trunk of a tree, where she contrives to conceal her nest with wonderful dexterity. The framework is formed of moss and other soft matters interwoven with fibres, and the inside is neatly lined with hair. The outside is carefully covered with *cobwebs*, and for a special purpose, which no other material within her reach would answer: that is, the more effectually to hide her workmanship, she sticks small pieces of lichen all over the cobwebs, which retain it firmly; and this is done so artfully that the exposed part of the nest cannot be distinguished from the general lichen-covered face of the trunk. Four or five eggs is the usual complement laid and hatched; and this very often twice in the summer. The young are fed entirely on the caterpillars which infest fruit trees; and consequently the chaffinch is an excellent friend to the gardener; although the latter is often its remorseless enemy, merely because he does not choose to be at the pains of keeping it off his seed-beds of cabbage, cauliflower, turnip, and other plants belonging to the *Brassicæ* family, for the chaffinch rarely destroys any other seeds. Gardeners are often blind to their own interest in these matters; destroying inferior animals instead of cherishing them; and thereby sustaining damage which might have been prevented by the exercise of a little mercy.

The eggs of the chaffinch are of a dull, muddy colour, and much spotted with dark brown and black, and they are of a roundish form. The notes of this bird are cheerful, and particularly its early song, which, though short, is gay and lively. To common observers this song appears to be the same in every individual; but amateurs who keep chaffinches in cages, assert that some birds have a superior style of performance, which if they possess in purity renders them highly valuable. Among the short calls of different kinds the *chink* of the chaffinch is well known; and its continuous *wet wet* in rainy weather, is the same note which it uses when alarmed by any person approaching its nest. Chaffinches associate with buntings, linnets, greenfinches, &c., in winter; they being generally seen feeding and roosting together.

The Bramble, or Mountain Finch (*F. montifringilla*).—These birds, though living in numerous flocks on mountains or open wastes, are seldom seen about the habitations of man in the daytime; yet they constantly resort to the evergreen hedges or shrubs in gardens to pass the night; but as soon as day breaks in the morning, they are all off again to the moors to pass the day. We have seen troops of them going to, or returning from their roosting places, in the twilight of morning or evening; and we have known *bat-folders* capture great numbers of these handsome birds out of laurel-hedges,

on dark nights, where not one was to be seen during the day. Their plumage is varied with black, brown, orange, yellow, and white; and they are about the size of the chaffinch, to which they bear some resemblance.

The Goldfinch (*F. carduelis*).—This is one of the most beautiful of our native birds; and it needs no description, from its being so commonly seen as a vocal captive. There is something peculiarly superior about this bird; his voice is rich and metallic; his attire splendid; and his nest is as genteelly formed and comfortably furnished as any lady's bedroom. The females choose thick, twiggy, low trees to build their nests in, and always at a distance of twelve or fifteen feet from the ground. A lime tree which has been clipped into form near a building is a favourite place; and next to that, fruit trees, particularly pears in orchards or gardens, afford convenient sites for holding their snug little nests. They lay four, sometimes five eggs, and these are the most delicate objects imaginable: the shell is pure white, almost transparent, and prettily dotted with pale brown and red towards the larger end. The young are fed with small caterpillars, and groundsel seeds; and after leaving the nest they keep in company with the old ones till next pairing season. A person acquainted with the notes and manners of these birds can easily tell whether they are engaged in the business of nidification. At all other times they, like other finches, while flying, sound a short note or trill at every bound of their wings, and this is loud enough to be heard at a considerable distance; but when in the breeding season they fly from tree to tree, this trill of their voice is uttered so softly, in a kind of whisper, that it is scarcely audible, and especially if very near the nest. By this precaution of the birds in endeavouring to conduct their domestic affairs as quietly as possible, their house and home is often discovered.

The goldfinch is no less admired for his song than for the rich brilliancy of his colours. No bird is more easily tamed, nor does any one form a stronger attachment to his mistress or keeper. The goldfinch breeds readily with the canary-finch in confinement; and we once knew of a hen canary which escaped from her cage into the garden, and there, having consorted with a goldfinch, made a nest in a hedge, and hatched a brood, which, with the mother, were taken and reared by a tradesman in the neighbourhood.

But the great merit of the goldfinch remains to be noticed. To it the farmer is much beholden, for assisting to keep his fields free from one of the most detested weeds; namely, the lance-leaved thistle (*Carduus lanceolatus*), and other species of the same family. Throughout the dreary months of winter the goldfinches subsist chiefly on the seeds of thistles,

and thistle-like plants, as the clothier's-brush or teasel (*Dipsacus*), &c.; and certainly they destroy vast numbers, which otherwise would be carried far and wide over the surrounding lands. When snow covers the ground, and only the heads of the thistles appear, the goldfinches are seen busy pulling these heads to pieces to get at the seeds; and when the bird-catchers wish to catch these birds, they always repair to those parts of the country where thistles are known to abound.

Goldfinches, like many other much-admired objects in nature, are, however gay their exterior, wanting in mind; for they are by no means teachable singers.

The Common Linnet (*F. linota*) is one of our finest vocalists. His tones are not so rich as those of the goldfinch, but have more variety; not so loud as the canary, but quite as harmonious. When reared from the nest, the male birds are very teachable, and soon learn any short passage of an air which may be whistled, or played to them on the bird-organ. They breed on commons or open parks, where furze-bushes grow, and where their nests are easily found in the breeding season. A fancier has only to walk among the furze, the earlier in the morning the better, and he may by chance see one flutter out of a bush, in which case the nest will be found near the top; but if he sees a linnet with a bit of moss, wool, or fibrous root in her mouth, he may conclude she is building a nest, and has only to stand still and mark the place she goes to; or if the bird has food in her bill, a few minutes' watching will direct him to the nest. On such occasions the male bird appears to be only a spectator of the industry of the female; for he is seen sitting on a bush near at hand, uttering now and then a low plaintive note, as if he were enjoining more caution on his more anxious mate. The linnet feeds chiefly on seeds of cruciferous plants, of which plenty are to be had in fields, either in the pods or scattered on the ground. The eggs are seldom more than five in number, and they are white, spotted with red at the larger end.

Country people make two species of linnet, namely the *rose* linnet and the *grey* linnet; the latter being esteemed the best song-bird; but we rather apprehend the male linnet never gains his full tints while in confinement, as no linnet in a cage is ever seen so red on the breast as those which are wild.

The House-Sparrow (*F. domestica*).—This is perhaps the most numerous species of small birds known in this or in any other inhabited country in the world. Wherever man has raised buildings, whether gorgeous palaces or rustic huts, there the sparrow will claim a domicile. Under the eaves of the roofs, particularly thatched roofs, or in any hole in the walls or projection of the architecture, these birds are sure to make

their nest. The capitals of Grecian architecture are favourite situations for them; and rather than be at a distance from human habitations they will make nests in the nearest trees. About fortified places they are always numerous, merely from the facilities afforded them of safe retreats for nestling and roosting in. That they were common in Judea is evident from the frequent allusions made to them in Scripture; and that they abound at the Cape of Good Hope, over all India and China, is well known. Although boldly familiar in seeking the protection, and availing themselves of the conveniences and food found about human dwellings, they are extremely suspicious, cautious, and jealous of human interference. To other birds of like propensities they are arbitrary and overbearing; driving away every bird (except perhaps the red-breast) that invades their territory. To the house-swallow, which sometimes builds on the acute angles of a pediment, and the little house martlet, the sparrow behaves most tyrannically; for after these birds have with much labour built their nests, the latter turns them out without mercy. The sparrow is extremely noisy, though he has but few notes; his usual call-note is disagreeable, especially when a congregation are in full song. They have a very distinct note of warning on he tapproach of a person, bird of prey, or any strange animal, which other birds, as well as their own family, perfectly understand—all flying to covert.

The nest of the sparrow is built in a slovenly manner; but warmth appears to be necessary to the young, as the nest is profusely lined with feathers. The young are fed entirely on caterpillars, which the parents collect in gardens and fields; but when the broods are all flown, they congregate, and under the guidance of the old ones are led to corn-fields, where they make sad havoc, especially among wheat, if not kept off. It is on this score that sparrows are proscribed by the generality of farmers; as in many country parishes premiums payable out of the church rate are offered for their destruction by dozens. In this we think the farmers overlook their real interest; for granting the sparrows do a little harm in harvest, they do so much good at other times, as fully to make up the loss they occasion.

The Tree Sparrow (*F. montana*) resembles the preceding in shape, in size, and in voice; but differs in being altogether of a paler colour, and having a white spot under each eye. They differ also in their choice of habitation: for the former may be called a citizen, this is a rustic. They live in societies, and generally choose a hedge-row or group of pollard willows for a settlement, and usually at a distance from buildings. This species is much more plentiful than they are generally supposed to be; owing to their being frequently taken when seen for the house

species. One naturalist, in describing this bird as the common one, remarks, "the *country sparrows* are cleaner and handsomer than those in towns."

In addition to the above, the following birds may be mentioned as common in British gardens:—

The Bullfinch (*Loxia Pyrrhula*) is well known as a cage-bird, and highly valued for its teachableness in learning short popular airs, which he will "pipe" with great accuracy if carefully taught when young. In their wild state they are hedge birds, mostly breeding there, and living on hedge fruits. Here, however, their song is nothing, as they bear no part in the woodland choir; their only audible note is a soft chuck of self-complacency. In winter, they resort to shrubberies to feed on the fruit of the privet; and if these be scarce, they will enter the garden and orchard, and steal a livelihood among the fruit-trees, particularly plums, cherries, and currants, the flower-buds of which they destroy extensively if not driven off.

The Greenfinch (*L. chloris*) is another hedge bird, which is very similar in its mode of life to the bullfinch. But while it is not so mischievous in gardens, it is much more useful in fields, subsisting chiefly on the seeds of the charlock, rape, and field-radish: all weeds the farmers detest.

The yellow-green plumage of the male bird is very beautiful, and he has a little *ariette* of five or six notes, each three or four times repeated during the song, which is far from disagreeable; when the hen is sitting, the male utters his song on the wing, and with a very peculiar style of flight (quite different from his usual flight, which is by regular bounds, like other finches), appearing as if he were paralysed, or drunk with joy; for his course is a perfect zig-zag, and, with outstretched quivering wings, sways right and left, suiting his actions to his music, but in a very awkward manner. Greenfinches associate with other small birds in winter, and get their food mostly on stubble fields.

The Yellow-hammer (*Emberiza citrinella*).—These birds are well known to every schoolboy; they are mostly a field-bird; as, except in winter, they seldom come near the gardens or dwellings of man; but in the fields they are met with everywhere. The nests of these birds are easily found, not only from the old ones always hovering about the place, but also from the slovenly way the birds have of drawing towards the nest longer straws than they can manage to bend round into the circular form of the exterior, consequently these straws serve as a guide. Straw forms the outside of the nest, and it is neatly lined with hair within. The hen lays four or five eggs, the ground colour of which is white, but much

speckled with brown and black freckles, with lines of the same colours running from one to other of the spots. The head and neck of the male are of a brighter yellow than those of the female; and he has a peculiar song, much resembling that of his congener, the bunting. It consists of a few notes begun slow and distinct, and ending with a shrill slur. The yellow-hammer is useful to the gardens, as it lives on the larvæ of insects in the summer, and on the scattered seeds of weeds in winter.

The Reed Sparrow (*E. schœniculus*) is a bird somewhat smaller than the foregoing, and mostly seen on damp rushy ground, making its nest and breeding in a thick tuft of these or other aquatic plants. The head of the male is surrounded by a circle of white feathers; and perched on the top of a low bush, he utters a few notes of a brief and plaintive character. Any one wishing to see these birds, has only to walk down to low meadows, where rushes and sedges abound, and there these birds may be seen, not in flocks, but in pairs. Unless sought for in the places above mentioned, these birds are seldom seen.

REVIEWS.

The Botanical Magazine for November contains:—

Arctostaphylos nitida, Hook.; *A. discolor*, Dec. A very beautiful shrub with shining leaves, and bell-shaped fruit, introduced in 1838. It is a native of Mexico, and will probably prove hardy in British gardens.

Kreysigia multiflora, Reich.; *Triplandenia Cunninghamia*, Don. "A very pretty, half-hardy, herbaceous plant, with the habit of *Streptopus*." It is a native of New South Wales, whence it was introduced in 1823. The flowers are star-like in shape, and of a pale pink.

Echinocactus corynodes, Pferiff. A curious specimen of this very curious genus, with a wreath of straw-coloured flowers, each with a red eye at the summit.

Franciscea latifolia, Pohl. A showy plant, belonging to *Scrophularineæ*, with deep violet-coloured flowers. It is a native of Brazil, near Rio Janeiro; and though it has flowered here in the hothouse, it would probably succeed in the greenhouse equally well.

Lasiopetalum macrophyllum, Graham. An Australian shrub, with corymbs of straw-coloured flowers, spotted with a rich reddish-brown.

Prepusa Hookeriana, Gardner. A perennial plant, with showy

flowers, conspicuous for the whiteness of the corolla, and the bright red of the calyx. It is a native of the Organ Mountains in Brazil, where it was found by Mr. Gardner in March 1841, and sent by him to England the following month.

The Botanical Register contains—

Cyrtochilum filipes. An orchideous plant from Guatemala, which has very much the appearance of an Oncidium.

Heimia salicifolia, var. *grandifolia.* A greenhouse shrub from Buenos Ayres, with large yellow flowers, resembling those of a *Verbascum.*

Æonium cruentum. A new name given by Mr. Webb to some of the kinds of stone-leek which he has formed into a new genus. It is a native of the Canaries.

Eria convallarioides. An orchideous plant with large leaves, and clusters of small white flowers, which have no fragrance. It is a native of India, and requires a hot moist stove.

Gesnera discolor. A native of Brazil, with deep purple pedicels and scarlet flowers, which are disposed in a large panicle.

Diplolæna Dampieri. A very curious plant from the Swan River, with dense heads of flowers, which have a very singular appearance, from the projection of the long stamens.

Paxton's Magazine of Botany contains—

Rhododendron Gibsonii. A splendid species of Rhododendron, found by Mr. Gibson, the collector sent out by the Duke of Devonshire, on the summit of the Khoseea Hills in the East Indies, at an elevation of four thousand feet. The flowers are large and white, and it requires the same treatment as the Nepaul Tree Rhododendron does in this country.

Coleus barbatus, syn. *Plectranthus barbatus.* A curious and rather pretty labiate plant, with blue flowers, a native of Abyssinia, which requires a stove in England.

Witsenia Maura. A curious greenhouse, bulbous-rooted plant, with the same habit of growth as *Witsenia corymbosa*, but with yellow and brown flowers.

The Botanist contains :—

Alstrœmeria Errembaultii. A very handsome hybrid *Alstrœmeria.*

Thunbergia alata, var. *clorantha.* A small-flowered *Thunbergia.*

Portulaca Thellusonii. A very showy annual, frequently figured before.

Grevillea sericea. An old greenhouse shrub.

The Botanic Garden contains:—

Stachys speciosa. A very handsome species, a native of Mexico, introduced in 1839, which appears quite hardy.

Helianthemum libanotus. A well-known species of sun-rose, with white flowers.

Epimedium violaceum. A very handsome species, introduced in 1835.

Liriodendron tulipifera. The flower of the tulip tree.

MISCELLANEOUS INTELLIGENCE.

Figures of a single and double dahlia have been found in an old work on the natural history of Mexico, published in Rome in 1651. In this work there is a very correct figure of a double dahlia, under the name of *Cocoxochitl*, with violet-coloured ray florets, and a very conspicuous yellow disk. It is thus clear that double dahlias, so far from being the result of European culture, were common in Mexico, before the plant was introduced into Europe.

FLORAL CALENDAR.

In December little can be done in the garden, save protecting the half-hardy plants from frost; several modes of doing which have been already given.

With this Number the Ladies' Magazine of Gardening will conclude, as from the number of other works I have in hand, I am no longer able to give it the attention it requires. As a volume, however, I trust it will still prove useful to the class for which it was originally designed; that is, to all those who, though fond of flowers, are neither regular gardeners nor professed florists.

J. W. L.

Bayswater,
November 8th, 1841.

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THE END.

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