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THE
GARDEN

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OF

GARDENING IN ALL ITS BRANCHES.

THIS IS AN ART
WHICH DOES MEND NATURE: CHANGE IT RATHER: BUT
THE ART ITSELF IS NATURE.—Shakespeare.

FOUNDED AND CONDUCTED

BY

WILLIAM ROBINSON,

AUTHOR OF "ALPINE FLOWERS FOR ENGLISH GARDENS," "THE WILD GARDEN," ETC.

VOL. II.

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1873.

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1872

TO THE
REVEREND SAMUEL REYNOLDS HOLE, M.A.,

OF CAUNTON MANOR, NOTTS,

AUTHOR OF

"A BOOK ABOUT ROSES," "THE SIX OF SPADES," ETC.;

FOR WHOSE WRITINGS AND GENIAL FELLOWSHIP ALL TRUE GARDENERS ARE GRATEFUL, THIS VOLUME OF "THE GARDEN"

IS RESPECTFULLY DEDICATED BY

WILLIAM ROBINSON.

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THE
REV. SAMUEL REYNOLDS HOLE, M.A.

THE First Volume of THE GARDEN was dedicated to the memory of one long passed away, but to whom gardening will be for ever indebted—J. C. LOUDON. The subject of our present notice is among us, in the prime of life; cheers with his presence most of our important horticultural meetings, and charms with his pen all interested in horticultural literature. Mr. HOLE is, it need not be said, well known as a florist, but he is a thousand times more endeared to the horticultural community by his genial character than ever he can be through any florist's triumphs. He is the high priest of good fellowship among gardeners of every degree. Those who have not had the pleasure of hearing any of his capital speeches, always sparkling with wit, such, for example, as those delivered at the Gardeners' Benevolent Institution, last year, may see evidence of this in many passages in the "Six of Spades," as well as in the "Book about Roses," and the "Little Tour in Ireland."

But Mr. HOLE is more especially distinguished as a florist, and it is chiefly as a florist we must speak of him in THE GARDEN, and his devotion to Rose culture has been most unremittingly followed up with an amount of success which has resulted in ample enjoyment and reward; for among Rosarians he is ungrudgingly acknowledged a head and chief. He is the founder of Rose Shows, and on such occasions is well known as a distinguished and unerring judge of that exquisite flower. Each year, as fresh varieties are brought forward by various cultivators, the never failing sagacity of his practised eye, and accomplished taste, pronounces the fiats of the "Rose King," which go forth undisputed, the condemned pretenders sinking back to the limbo of obscurity and neglect, while the favoured among the blooming throng at once take the places assigned to them in the Court of Beauty and Sweetness, without let or hindrance, and become the ruling fashion of their season, as other beauties do, attracting ever increasing crowds of willing worshippers, till new bebies, in due course, replace them in the affections of inconstant votaries. But here and there a flower of matchless beauty and perfection assumes the place of a perennial queen, to add to the permanent stock of our magnificent modern Roses, of the exquisite beauty of which the ignorant growers and admirers of the Queen of flowers in former times could have conceived no idea, even in their brightest flights of fancy, or their wildest Rosarian dreams. But these are matters too closely connected with the pride of place, and privilege, and precedency, in the Rosy Court of Sweetness and Beauty to be discussed beyond its immediate precincts; they must be left exclusively to the despotic ruling of its accomplished Lord Chamberlain, who, in his office, possesses the courtly gift of uttering even utter condemnation in such pleasant, witty words, as are more charming than another's praise; and many a fair Rose, defeated and condemned, might exclaim with *Phoebe*, in "As you like it"—

Sweet youth I pray you chide a year together;
I'd rather hear you chide, than that man woo.

But let us hear the benignant despot speak for himself; for that he has a right to do so, is sufficiently proved by what he advances in the preface to his charming "Book about Roses." "I write about Roses," he says, "because, having grown them for twenty years, having won more than thirty cups, 'open to all England,' having originated the first Rose Show, that is the first show of Roses only, and having attended most of the subsequent meetings, either as a judge or an exhibitor, I ought to have something to say worth hearing to those who love the Rose; and will try to say it, as Bassuet preached, *sans etude, familierement de l'abondance du cœur.*"

In the abundance of useful hints which he then proceeds to pour forth to us in this brilliant little volume, we are first informed how recent and how rapid have been the great advances in Rose culture; but while telling us that twenty years ago Roses were grown by the dozen, and then by the thousand, and now by the acre, he feels compelled to state, emphatically, that the number of beautiful Roses in proportion to the vast multiplication is not what it should be; he is, indeed, so fully prepared with a negative to the question, "Has beauty been produced in fair proportion to quantity?" that he facetiously calls upon his printer to furnish him with two of his biggest and blackest capitals, in order that he may sufficiently emphasize his answer, "NO." This call for the big capitals is so amusing that it fairly takes the

sting out of the condemnation, and there is consequently a hearty laugh instead of a dismal groan in the condemned cell of rejected flowers. *Phoebe* was right, one would rather be chid by a judge so witty and so genial than patted on the back by a stupid one. How pleasant he is, too, when conducted with an air of triumph by a self-satisfied amateur to one of those "dismal slaughter-houses which are called a Rosary;" our smiling judge condemns with such *bonhomme*, and illustrates his condemnation so delightfully from his inexhaustible stores of anecdote and racy narrative, that the discomfited amateur positively goes on his way rejoicing, primed with half-a-dozen capital stories which he no doubt means to retail on the very first opportunity. He has been told, *apropos* to his unsuccessful Roses, of a volume of sermons reviewed in the first volume of the *Edinburgh Review* by SIDNEY SMITH, of which sermons the witty divine remarked, as critic, that their characteristic was "decent debility"; and then, as a young Rose grower, the amateur was smilingly informed that his progress had been somewhat analogous to that of GEORGE III. when learning the fiddle, who, when he asked his master, the celebrated VIOTTI, what he thought of his pupil, received, with a profound how and courtly smile, the following reply:—"Sire, there are three classes of violinists—those who cannot play at all, those who play badly, and those who play well. Your Majesty is now *commencing to enter upon* the second of these classes." What a capital story for the defeated Rosarian to take home to dinner, and retail, over the claret, to his neighbour, who may, perhaps, fancy himself a musician. This Rosist malefactor was let lightly and pleasantly off; but there is occasionally sterner rebuke in pickle for more obstinate offenders.

With what delightful enthusiasm our great Rosarian tells of the complete devotion that is absolutely necessary to the successful culture of the Rose. Something more than the ordinary devotion of a man seems to be requisite—a degree of devotion more akin to that of the more constant sex, for, as BYRON tells us, "Man's love is of his life a thing apart, 'tis woman's whole existence," as must be that of the Rosarian to the Queen of flowers, if he wishes to be triumphantly successful; for, says Mr. HOLE, "he must have, not only the glowing admiration, the enthusiasm, and the passion, but the tenderness, the thoughtfulness, the reverence, the watchfulness of love,—with no ephemeral caprices like those of the gay 'young knight who loves and rides away'"; on the contrary, the cavalier of the Rose must have *semper fidelis* upon both crest and shield. The Rose will not submit to be treated simply as one among the many fair flowers of the garden. Her "Standard" must not be made to form the central object of a neat little circlet filled with a few "bedding plants," which, like a band of leeches, suck away the life-blood of the Rose, and though—

Around the red Rose the Convolvulus climbing,

As Mrs. HEMANS says, sounds sweetly pretty, we are told "that such would be the loveliest arrangement possible, only that unfortunately it is death to the Rose. It is in fact these pretty little floral contrivances that defeat the object of the would-be Rose grower, as our author teaches us in sober earnest, while he amuses us, and makes us laugh. "Why does Charles Lefebvre behave so disgracefully in my garden?" asked a disappointed lover of Roses of the Seer, "Because," replies the man of Rose lore, "your 'Charles Lefebvre' is placed, like Titynus, '*sub tegmine fagi*,' under the drip and shade of a noble Beech tree, whose boughs above and roots below keep all nourishment from him." The august Rose will not submit to be placed as an ornamental dummy in front of a belt of shrubbery; he must have his own special conditions ungrudgingly complied with in every iota—and then—well, one need not tell experienced Rosarians what the result will then be, in the case of Charles Lefebvre.

What charming chapters there are in this compact little volume on a variety of matters connected with Rose growing and general gardening, and how well, truthfully, and honestly they are considered and calculated, so as to bring into activity the highest and best characteristics of the true gardener. To the genuine lover of flowers not only for their beauty, but for the pure pleasures that accompany their culture, was ever such a variety of hints and counsels conveyed in pleasanter or wittier words, on such a wide range of subjects connected with horticulture, from the inculcation of a love of flowers to parish children, to pleasant vauntings over new discoveries anent the *summum bonum* of "manures," and even to the humours, how racily told, of Rose shows?

Readers of THE GARDEN are familiar with the sparkling pages of the "Six of Spades," nor need it be pointed out that every communication from Caunton Manor, of which Mr. HOLE is the happy vicar, on whatever subject, grave or gay, is sure to contain some happily-conceived phrase, some cleverly picked out word, that never fails to brighten and light up horticultural pages that might otherwise, in the hands of routine writers, become just a trifle wearying, however conscientiously done, necessary, and useful. Such a writer as Mr. HOLE is a real benefactor to horticultural literature, for he not only revels in floral beauty, with the pleasantness of a true laughing philosopher; but where so many would be dull, he cannot be so—he makes the very desert smile. Of the good effect of gardening on a rightly balanced mind, Mr. HOLE says, "I have proved from my own experience that of all outdoor exercises, horticulture is the happiest and best, and realised the truth of Lord BACON's words, 'Gardening is the purest of human plea-

tures, and the greatest refreshment to the spirit of man.'” Allowing that, as a gardener, a man may not find as much excitement as may be found in a run with the Quoru hounds, or in a day among the Heather, with plenty of grouse, he yet maintains that as a constant, life-long source of cheerful belief and innocent diversion from the work and from the inevitable sorrows of life, the recreation of horticulture surpasses all. Mr. HOLE does not affirm that gardeners are free from great failures and reverses. He is not oblivious of the mealy-bug, the red spider, the wireworm, the cockroach, the earwig, and endless tribes of beetles, caterpillars, snails, and slugs after their kinds. He admits the drawbacks of mildew, canker, and blight. He knows very well, as he pleasantly tells us, that the mellow ouzel fluting it so cheerily up in the Elm, has wet his whistle with the ripe Cherries, and proposes to wet it again. He freely admits not only being aware of, but also having experienced most of the ills that gardening is heir to, from a thunderstorm to the nibbling mouse plague; but still avers that these solitudes only enhance its joys; and that there is no month in the year, no day in the week, supposing the existence of a “bit of glass” (“who loves a garden, loves a greenhouse too,” says COWPER), when there is not something new, something beautiful to interest and please.

He tells us, with the glee of a true-hearted enthusiast, how, in the dreary month of November, he cut fine flowers of the last Roses of autumn, Gloire de Dijon, Maréchal Vaillant, and Souvenir de Malmaison; which, mixed with a few fronds of hardy Ferns and a few feathers from the plumes of the Pampas Grass, made up a by no means contemptible bouquet; and next we are told of his healthy afternoon's dig in his kitchen garden, which made him feel muscular enough to “swarm up the very greasiest pole, and eat the leg of mutton at the top of it afterwards.” He has, too, his tiny “stove” in that happy vicarage garden, from the Stephanotis on the roof of which many a fair maid of the parish and neighbourhood of Cauntou has had her bridal bouquet, and in which he is able to force a few early Strawberries—which do not merely give the grower intense pleasure by their fragrant beauty, but serve still better purposes. A doctor once sent a dozen miles for the same number of berries, and afterwards told the happy grower that they were well worth a pound apiece to his patient.

It is not only in the literature of the garden that Mr. HOLE shines so conspicuously. Everything that his pen touches is embellished by it; and, indeed, it may be fairly said, as JOHNSON inscribed upon the tomb of OLIVER GOLDSMITH, “Nullum tetigit quod non ornavit.” In evidence of this, let us refer to the charming “Little Tour in Ireland,” which is brimful of the most genial humour, and apt and characteristic description. Yet, after all, it is the literature of the garden that we wish to see most often sparkling with the ready wit and pungent pleasantries of the author of the “Six of Spades,” brightening up for us every department of horticulture, with all of which he is so pleasantly and enthusiastically conversant.



"This is an art
Which does mend nature : change it rather : but
THE ART ITSELF IS NATURE."—*Shakespeare.*

NOTICE.

The FIRST VOLUME of THE GARDEN will be Published early this month, and will contain an Original Portrait of the late Mr. Loudon. The Index to the Volume will be ready for Publication next Saturday.

RECOLLECTIONS OF JOHN CLAUDIUS LOUDON.

BY NOEL HUMPHREYS.

(Continued from Vol. I., p. 698.)

LOUDON, when he first arrived in London, was much struck with the opportunity afforded by our spacious squares for enlivening, with the aspect of fresh green leaves, the dingy expanse of London houses, then nearly all built of brick, and blackened by the perpetual action of the coal smoke emitted by hundreds of thousands of chimneys. He perceived, however, that our squares were not made to enliven the murky aspect of the great wilderness of bricks and mortar, as they might have done; but almost the contrary, in consequence of a mistaken notion of their planters, that evergreens would be just the thing for the London squares, in order to insure a continuation of "verdure" through the winter. But the evergreens, as our young Scotch horticulturist found to his extreme disgust, had become permanently "nevergreens." The dingy-looking trees which he found struggling through a black and miserable half-existence, consisted chiefly of Scotch pines, yews, and spruce firs; all of which being exceedingly well calculated to receive and preserve the daily and nightly deposits of soot, without the power of renewing their foliage every spring, like deciduous trees, were evidently the very worst kind of plants that could possibly have been selected for the London atmosphere. This ignorant abuse of a fine opportunity woke up the young landscape gardener's indignation, and he dashed into print. Before the close of the first year of his residence in London (1803) he published an article in a periodical called the *Literary Journal*, which he entitled, "Observations on Laying out the Public Squares of London." The main gist of the article consisted in an uncompromising denunciation of the prevailing system, and in strongly recommending the plentiful introduction of deciduous trees, the foliage of which, renewed with the coming of each successive spring, would, as he remarked, secure a cheerful aspect to the squares for some seven months or so of each year. He particularly named the Oriental and Occidental planes, the sycamore, and the almond, as ornamental trees that would bear the smoke of the great city with comparatively small injury; and it is interesting to find how quickly his suggestions were adopted, and to note that there is scarcely a square in London in which planes are not found whose growth evidently dates from about that period or shortly after; and the same may be said of other trees which he named; while the yews, the Scotch pines, and the spruce firs have entirely disappeared.

It was about this time that he became a member of the Linnean Society, and it was also in the summer of 1803, according to a note in his journal, that he first conceived the idea of trying the effects of charcoal on vegetation; the thought having occurred to him in consequence of noticing the beautiful verdure of the young grass that sprung up all over a small space where charcoal had been burned.

In 1804, having been commissioned by Lord Mansfield to make some plans for altering the palace gardens at Scone, Perthshire, he returned to Scotland, and remained there for several

months, during which period he laid out grounds for several gentlemen in different parts of the country. The instructions he found it necessary to communicate to gardeners, foresters, and others, on the planting and management of woods, during the carrying out of the various works he was then engaged upon, and also during many extensive arrangements for draining, and otherwise improving several of the estates in question, led him to make a series of detailed and important notes, which he soon afterwards embodied in a book, which was published in Edinburgh by Constable & Co., and in London by Longmans & Co. This was the first work which Mr. Loudon presented to the public through the great firm of Longmans & Co., with whom he continued to transact business for nearly forty years. The book alluded to was entitled, "Observations on the Formation and Management of Useful and Ornamental Plantations; on the Theory and Practice of Landscape Gardening; and on Gaining and Embanking Land from Rivers or the Sea."

This was his first important work, and contained so many new ideas, explained in such a practical fashion, and at the same time combining with those practical views the power of expressing such noble sympathies with the beauties of nature, that the work met with considerable encouragement, and attracted the attention of many great landowners to the young horticulturist, who had not only the boldness thus to rush into print, but the evident capability of imparting a mass of useful and, up to that time, little known information on the subjects of which he treated. Of the poetical feelings which he mingled with the practical, the following extracts from the introduction will afford a fair idea. They are scarcely equal to similar passages in his later books; but as occurring in his first serious work, they may be advantageously introduced in this place, as samples of his earlier style:—

"Various are the vegetable productions which this earth affords. Blades of grass spring up everywhere, and clothe the surface with pasture; groups of shrubs arise in some places, and diversify this uniform covering; but trees are the most striking objects that adorn the face of inanimate nature. If we imagine for a moment that the surface of Europe were totally divested of wood, what would be our sensations on viewing its appearance? Without this accompaniment, hills and valleys, rivers and lakes, rocks and cataracts—all of themselves the most perfect that could be imagined—would present an aspect bleak, savage, and uninteresting. But, let the mountains be covered with wood, and the water shaded by trees, and the scene is instantly changed: what was before cold and barren, is now rich, noble, and full of variety. In travelling through a naked country, a whole unvaried horizon is comprehended by the eye with a single glance; its surface is totally destitute of intricacy to excite curiosity and fix attention; and both the eye and the mind are kept in a state of perpetual weariness and fatigue. But, in a wooded country, the scene is continually changing; the trees form a varied boundary to everything around, and enter into numberless and pleasing combinations with all other objects; the eye is relieved without distraction, and the mind fully engaged without fatigue. If we examine even a tree by itself, the intricate formation and disposition of its boughs, sprays, and leaves, its varied form, beautiful tints, and diversity of light and shade, make it far surpass every other object; and, notwithstanding this multiplicity of separate parts, its general effect is simple and grand."

The book contains, among other valuable matter, a number of acute observations on the distinctive characteristics of trees and shrubs, plainly showing how carefully and completely he had studied his subject even at that early period of his life, and how fully capable he was even at the age of one-and-twenty of undertaking and carrying out horticultural works of the most important kind. Before leaving Edinburgh in 1805, he published another work, entitled, "A Short Treatise on some Improvements lately made in Hothouses."

On his second visit to London, he was compelled by stress of weather to land at Lowestoft, on the coast of Norfolk, and he had suffered so much during the voyage, that he then determined never again to travel by sea where there was a possibility of going by land. On his return to England he at once resumed his labours as a landscape gardener, and his journal of that period is filled with innumerable notes founded on the ideas which suggested themselves to his ever-active mind during the progress of the various works upon which he became immediately employed. Among the most remarkable are his theories on the best

system of harmonizing the effects of colour in flower gardens. He arrived at the following general conclusions, which, though founded only on observations and an instinctive fine taste for colour, accord perfectly well with the more recent scientific discoveries on the affinities of colours, and of those which are necessarily complementary in regard to others. For instance, he asserts in these interesting notes, that he invariably found, while studying the best effects in gardens, that when flowers were so arranged as to have a plant bearing flowers of a compound colour placed next to a plant bearing flowers of a simple colour, which contained neither of the colours forming the compound one, that the best effects were produced. Thus, as there are only three simple colours—blue, red, and yellow—he advised that purple flowers, which are composed of blue and red, should have yellow next to them; and that orange flowers, which are composed of red and yellow, should be contrasted with blue; and that greenish flowers, which are composed of blue and yellow, should be relieved by red. Many years afterwards (1839) he was much delighted to find that M. Chevreul, the director of the famous manufacture of Gobelin tapestry, in his celebrated work, entitled “De la Loi du Contraste Simultané des Couleurs,” took precisely the same basis for the erection of his vast superstructure, which is the most exhaustive treatise on the nature of the contrasts and complements of colours that has hitherto appeared.

About the same time, that is in 1805, young Loudon formed the ambitious project, in part founded on his theory of colours, of publishing a pictorial dictionary, which was to embrace every kind of subject in which the treatment of colours, formed a part; but the scheme was never realised. In the following year (1806), though constantly employed in planning and laying out grounds, he yet found time to write his “Treatise on Forming, Improving, and Managing Country Residences; and on the Choice of Situations Appropriate to every Class of Purchasers: with an Appendix, containing an Inquiry into the Utility and Merits of Mr. Repton’s Mode of showing Effects by Slides and Sketches; and Strictures on his Opinions and Practice in Landscape Gardening; illustrated by Descriptions of Scenery and Buildings, by Reference to Country Seats and Passages of Country in most parts of Great Britain; and by thirty-two Engravings.” The work was the most bulky and important, as it was the most costly, he had as yet published. The illustrative engravings were careful reproductions of really excellent drawings executed by himself, which were afterwards republished, with short descriptions, as a separate work. At the time I knew Mr. Loudon, many years afterwards, he still preserved a set of proof impressions of this series of engravings, which he was fond of exhibiting to intimate friends as reproductions of drawings which he had made before his right hand became so crippled as to prevent his indulgence in the manual use of pen or pencil for the whole remainder of his life; a deprivation which he felt most keenly and unceasingly, and yet with that placid resignation which was one of the most distinctive traits of his character.

(To be continued.)

Royal Parks’ Act.—On Saturday the Act for the regulation of the Royal parks and gardens was printed. The object of the statute is to protect from injury the places under the management of the Commissioners of Works and Public Buildings, and to secure the public from molestation and annoyance while enjoying the same. A schedule contains the regulations to be observed, and the powers conferred are not in derogation of any other statute. Among the twenty regulations is the following:—“No person shall deliver, or invite any person to deliver, any public address in a park, except in accordance with the rules of the park.” In a second schedule the following parks are referred to:—Hyde Park, St. James’s Park, the Green Park, Kensington Gardens, Parliament Square Gardens, Regent’s Park, Kennington Park, Primrose Park, Victoria Park, Battersea Park, Greenwich Park, Kew Gardens, Hampton Court Park, Richmond Park and Green, Bushey Park, Holyrood Park, and Linlithgow Park. By one of the provisions for appointing a park-keeper, a person may be fined a sum not exceeding twenty pounds, or be imprisoned for a term not exceeding six months, with or without hard labour.

HARDY PLANTS IN FLOWER ROUND LONDON.

(FROM JUNE 27TH TO JULY 3RD, INCLUSIVE.)

BY OUR OWN REPORTERS.

Achillea biserrata filipendula incisa Millefolium rosea mollis	Dianthus serotinus Digitalis eriostachys fulva lanata sibirica	Lilium Brownii excelsum fulgens and vars. giganteum longiflorum philadelphicum Thunbergianum and vars.	Pyrethrum achilleae-folium alpinum Balsamita Robinia viscosa Rudbeckia californica triloba Salvia Æthiopis sylvestris Sanguisorba dodecandra Santolina rosmarifolia Scutellaria orientalis Scyphantus elagans Sedum arropetalum Gmelini Senecio Doronicum Sempervivum acuminatum heterotrichum Mettenianum Serratula polyclonis Seseli elatum Sida malvaeflora Silene fruticosa Solidago canadensis rigida Spartium junceum Spiraea callosa corymbosa Douglasii laucolata nutans venusta Stenactis annua Tanacetum vulgare crispum Tetragonolobus biflorus purpureus Teucrium pyrenaicum Thymus vulgaris varie- gatus Trifolium pannicum Tropaeolum majus Urospermum Arnopogon Veratrum nigrum Verbascum Blattaria Chaixii longifolium pulverulentum Veronica Andersonii neglecta Vicia Crucetorum sylvatica Yucca recurva
Actaea racemosa spicata Alstromeria Errebanhittii Alyssum maritimum Anagallis cærulea Anisodus luridus Anthemis nobilis plena tinctoria Anthericum ramosum Apuilegia glandulosa Asclepias Cornuti Asphodelus creticus Atragene sibirica alba Betonica hirsuta officinalis serotina stricta Brodiaea grandiflora Buphthalmum salicifolium Callincriis incisa Calycanthus floridus and vars. Campanula caspitosa alba gramineus gummifera petiolata Tenorii turbinata Centaurea Clementei ragusina Cholorogalum pomeridianum Cichorium Intybus Cineraria maritima Cirsium munitum pulchrum Clarkia elegans pulchella Convulvulus tricolor Coreopsis lanceolata Cynara Scolymus Cytisus capitatus nigricans Delphinium Ajacis and vars. Deutzia corymbosa gracilis scabra staminea	Dracocephalum peregrinum Dryas Drummondii Echium salmanticum Epilobium obcordatum Erica ramulosa Eryngium giganteum planum Eutocia grandiflora viscida Ferula glauca thysiflora Funkia laucolata ovata Schubertii Galega hirsuta officinalis alba Galium verum Gaura Lindheimeri Gentiana cruciata gelida Saponaria septemfida Geranium aconitifolium Gilia tricolor Gladiolus Colvillei var. Goletia bifrons Lindleyana vimeana Gymnadenia conopsea Helianthus multiflorus pl. Hemerocallis disticha Hypericum elegans Gebleri perforatum Iberis coronaria lula Helenium Jasminum Reevesii Laserpitium crithmifolium Lathyrus demersus latifolius ensi- folius venosus Lavatera thuringiaca Leptostiphon densiflorus Lyccesteria formosa Ligularia Kampferi	Linaria heterophylla saxatilis Linum grandiflorum usiatissimum viscosum Liriodendron Tulipifera Lophanthus urticeifolius Lotus Gebelia Lupinus mutabilis and vars. nanus Lysimachia tomentosa vulgaris Magnolia glauca Malva Alcea Matthiola bicornis Medicago carstiensis elegans Modiola geranioides Morina longifolia Nierembergia frutescens Nigella damascena hispanica Nolana prostrata Nuphar lutea pumila Enothera biennis bistorta Fraserii fruticosa disticha grandiflora speciosa taraxacifolia Onobrychis baicalia Ononis hircina Onopordum Acanthium Ornithogalum arabicum Papaver hyoscyamifolium Parnassia palustris Phacelia congesta Phlox glaberrima Potentilla fruticosa Ptelea trifoliata Punica Granatum	

Plants in this list are almost without exception such as have come into bloom during the past week.

New Park for Leeds.—Roundhay Park is at last secured for the inhabitants of Leeds. Much must be done to it, however, to render it fit to receive the vast crowds who will flock to it. Plans have, we believe, already been prepared for the laying out of new walks and drives, and we trust that care will be taken, in carrying them out, to preserve unimpaired the natural beauty of the park. If the people of Leeds are to have a really beautiful suburb at Roundhay, good taste must be shown in the character of the houses to be built on the fringe of land on its outskirts.

THE GARDEN IN THE HOUSE.

MARANTAS.

The following engraving of *Maranta fasciata* illustrates one of the very handsomest fine-foliaged plants in our collections. Its green leaves, banded with white from the midrib to each margin, characterise it as peculiarly suitable for the decoration of vases. *Maranta roseo-picta* is of more recent introduction, and is noticeable for its rosy midrib and for the similarly-coloured bands upon the leaf a little way from the margin.



Maranta fasciata.

We have often been struck with the absurdity of the forms of vases into which some people delight to thrust the flower-pots in which their favourite plants have been grown. And as our illustrations of the right path and the wrong path in the matter of building up rockwork have, as we are informed,



Maranta roseo-picta.

helped materially to a clear comprehension of what should be done and what avoided, so we venture to hope that the annexed engravings will direct attention to what is good taste, and what is not good taste, in the matter of plant vases. In the vase which holds *Maranta roseo-picta*, there is a chasteness and a beauty of outline which cannot fail to please, combined with a solidity which harmonises well with the style of the

plant. The vase which contains the plant of *Maranta fasciata*, on the contrary, consists of a clumsy heavy saucer, partly supported by a thick piece of stick, and partly by the tail of a pig-headed, or pug-headed fish, which is gracefully reclining his snout and two out of his four ears upon a raised cushion. Such a zoological monstrosity may be amusing to some people, who may also find something to laugh at in the anatomical impossibility of any fish or fish-shaped creature standing upon its head and supporting a heavy weight on its tail; not to mention its double allowance of aural appendages; but we doubt if it would be possible to suggest any form of vase more out of character with the beautiful plant which it contains than this particular vase must appear to the eye of good taste.

CULTURE OF PLANTS IN ROOMS.

(Continued from p. 710, Vol. I.)

TRANSPLANTING.

THE best season for transplanting is when the plants are about to pass from a state of rest into a condition of fresh growth, that is, early in spring. Another favourable time is at the end of the first growth in spring, and before the plants (as is the case with many evergreens, such as Camellias, Azaleas, &c.) commence to form the buds for the following year. Transplanting at the time when the plant is in full growth should be avoided, as it disturbs the growth of the plant, and the young shoots are frequently injured, and sometimes quite destroyed. It is only to be recommended when individual specimens of speedy growth are grown for exhibition, and for this purpose are transplanted several times in the course of the summer. Transplanting in autumn is especially to be avoided in the case of room plants, as the new soil does not become filled with roots during the winter, and, in consequence, becomes sour and spoiled; and, if not watered with great care the plants will become sickly, or perish completely. There are a few exceptions to this; as, for instance, bulbous plants, which are kept dry late in summer, and are intended for winter blooming, and some other plants which are to be forced in winter. We would specially remark that the results of forcing will be so much the more certain, the earlier this transplanting takes place, in autumn or late summer.

In the common practice of transplanting, fine healthy specimens are sought to be raised in pots which are proportionately not too large. Plants which have their ball only so far filled with roots that a few small ones reach the side of the pot, should not be transplanted so long as these roots are healthy, and the soil of the ball is fresh, and does not give out a sour smell; which, as we have seen before, is the result of an unhealthy and injurious condition.

Where the soil is spoiled, or the young roots are unhealthy, or, as is frequently the case in good culture, the entire ball becomes so full of roots that it seems to be thickly covered with threads, the plants should be transplanted. Therefore, before proceeding to transplant, the condition of the ball should be examined. This should be done very carefully, so that, in case no change is necessary, the ball may be replaced in the pot without injury. With small plants this examination is best effected in the following manner:—The left hand is spread over the top of the pot, allowing the stem of the plant to come between the fingers. The pot is then taken in the right hand and reversed. The edge is then carefully struck against the corner of a table or board, so as to loosen the pot from the ball; the pot is then lifted off and the ball examined. In the case of larger plants, the soil is first of all allowed to become somewhat dry, then the plant is seized by the lower part of the stem and lifted along with the pot. The pot is gently struck on the rim with the hand or a piece of wood, and so carefully separated from the plant. When a ball filled with roots will not readily separate from the pot, a knife should be passed round the edge as deep as it will go; this will greatly facilitate the operation.

Lastly, plants in large wooden tubs or boxes should only be transplanted when an examination of the ball from above shows that transplanting is absolutely necessary. The vessels

are removed either by taking off the hoops of the tubs, or by taking the boxes to pieces, or else by first passing a long knife round the ball to loosen it, and then turning the vessel on its side and carefully drawing out the plant. After the ball has been carefully removed it should be reduced in size, by removing the spoiled and exhausted soil, in order to give the plant as much fresh good soil as possible, without having to place it in too large a pot or other vessel, which, especially in room-culture, would be very inconvenient. For this purpose the earth round the ball is loosened by means of a sharp-pointed stick, and is shaken out from the roots, so that the ball may be rounded above and below, and its diameter reduced to three-fourths or two-thirds of its former size. If there is an underlayer of potsherds, &c., it must be entirely removed. The roots should then be trimmed round with a sharp knife. In sickly plants the roots will be more or less decayed in parts. These parts must be cut back until sound wood is reached. The roots of healthy plants should not be cut when the plant is in a state of active growth; in which condition, or when it is known that the plant will be injured by a severe root-pruning, it will be sufficient to take away some of the upper soil, to remove the layer of potsherds, to loosen the surface of the ball, and to trim a few of the longest roots a little.

In planting, a pot should be selected so large that, according to the strong or feeble root-forming powers of the plant, there may be around the ball a layer of fresh earth from one-third of an inch to one inch thick. A piece of potsherd, arched in shape, should then be placed over the drainage-hole, so as to cover it well above, but leaving space at the sides for the flow of water. Then should follow a layer of broken potsherds from half an inch to one inch thick, and over this a thin layer of moss to prevent the soil being carried among the sherds. Instead of the layer of potsherds, a layer of moss or of coarse sand may be used, or some of the coarse fibrous tufts which remain in the sieve when soil is sifted. Attention in providing good drainage will be always repaid by the healthy condition of the plants which it secures, especially if they are sometimes carelessly and immoderately watered. After the drainage layer has been put in, just so much soil should be placed upon it that when the ball is laid in, the uppermost roots will be from about one-third of an inch to half an inch below the top of the rim of the pot, so that when the soil is filled in, there may be sufficient space left to retain the water in watering. The ball being so placed that the plant may stand exactly in the centre of the pot, the soil should then be filled in. This should be dry, so that when closely pressed it will not become cloddy. During the gradual filling-in of the soil, the pot should be repeatedly shaken, so that the soil may be evenly settled all round. In small pots it will be sufficient after the soil is filled in to press it down close with the thumb. In pots more than five inches high, especially when the space between the pot and the ball is only limited, the soil should be pressed in during the process of filling in, with a flat blunt piece of wood, so that it may lie evenly in all parts. When the soil is moist and stiff it should not be pressed so closely. The common rule is that a well-potted plant, if the pot is not disproportionately large, may be lifted up by the stem along with the pot without the pot falling off. This experiment should not be tried with weak plants, as they could not sustain the weight of the pot, and would break off, especially if the soil was stiff and moist and the pot rather heavy.

After filling in with just so much soil that the upper roots will be covered, it is to be pressed round the rim of the pot, so that the flow of the water may be directed towards the ball, and not pass through without wetting it thoroughly. When it is desired to raise fine strong specimens quickly, the roots of the plants should not be trimmed more in transplanting, than will allow them to draw sufficient nutriment from the soil in the pot for a strong growth. Two modes of treatment are in use, viz., a single transplanting, and transplanting several times. Single transplanting in pot culture is similar to that practised in open-air culture. It is generally employed in the case of young healthy plants of quick growth, which have not been long raised from seeds or cuttings. When they are transplanted in spring, they are put into pots from twice to four times the diameter of those in which they have previously grown. The old ball is not

disturbed, only the roots which come through it are loosened and spread out in the fresh soil, which should not be pressed down so closely as in ordinary transplanting, as it will be quite sufficient to shake the pot frequently and then press the soil down gently with the thumb. A deep layer of potsherds and moss for drainage, is, in this case (where at the same time a great deal of nutriment is given, and the soil changed only once in the year), very conducive to successful results.

Frequent transplanting effects the same purpose in a different manner. Here also the ball is not disturbed at the time of transplanting, but the pot should be only two or three inches larger in diameter than the pot from which the plant is removed. The soil also, when filled in, should not be pressed down so much as in ordinary transplanting, and the means of good drainage must not be neglected. If a strong growth sets in, the ball must be examined from time to time by carefully inverting the pot. As soon as the ball is quite filled and surrounded by the new roots, the plant must be transferred to a larger pot. A strong and fast-growing plant may, in this manner, be transplanted from two to four times between spring and the beginning of August; after which time further transplanting must be avoided, as such plants endure the winter with greater difficulty and suffer more in proportion as the ball is scantily filled and penetrated with roots.

Of these two methods of raising strong specimens we would, for room-culture, recommend the latter, for the following reasons:—

1. In a room only a few plants can be devoted to this purpose, as they require a good, open position near the window, where, of course, there will not be room for many large specimens. The trouble of frequently transplanting these few will not, therefore, be great.

2. All plants do not bear the change into comparatively very large pots well, but there are some which, when so planted, in spite of all care in watering and drainage, become sickly instead of strong. As an example, we may name the Coffee-tree (one of our most durable room plants), the seedlings of which will bear a tolerably large pot; while plants of the same, raised from cuttings, when transplanted into too large a pot, soon become very much deteriorated in appearance. *Dracæna Jacquinii* and *D. marginata* do not succeed well in large pots, while the other species of *Dracæna* thrive very well in them. Therefore, as the amateur is liable to make mistakes in his selection of plants for this purpose, frequent transplanting affords a means of remedying his errors in this respect, as by often examining the balls he can ascertain to what extent new roots have been formed, and so whether the plants require removal into larger pots or not.

3. By frequent transplanting, the treatment of the plants with regard to watering is much simplified.

4. Small plants in large pots do not look well, and therefore are not suited for room-decoration. The system of single transplanting affords no remedy for this.

Special modes of transplanting are not employed in ordinary room-culture. But in glazed cases and double windows a different method is used, especially in the case of Epiphytes. With these, whether grown in pots, vases, or baskets, the soil must not be closely pressed down, but should be left very loose. All the interstices should be stopped with sphagnum, laid on inside the pots, and the soil should be a mixture of chopped moss, pieces of decayed wood, and coarse fibrous heath soil or peat. Where these plants are only grown on wood, a layer of moss should be fastened on with thread or wire; or if they are plants which, like many of the *Bromelia* family, have been previously grown in pots, the ball should first be wrapped round with moss, and then fastened on to the wood. In this way, in glazed cases, a dead branch here and there is furnished in a picturesque manner with such plants.

Lastly, we have to mention top dressing, which sometimes (especially in the case of plants grown in tubs and boxes, and which, therefore, are more difficult to transplant) takes the place of transplanting. In this operation the soil on the upper part of the ball is loosened by means of a pointed stick; and, after the soil so loosened is removed, the soil at the sides of the vessel is loosened in the same manner to as great a depth as possible, and also removed. The longest of the roots which are thus laid bare are then trimmed, and suitable fresh soil is

filled into the place of that which was taken out. Care should be taken not to fill in the fresh soil any higher than just to cover the uppermost roots of the ball, as, when the upper part of the ball is not well filled with roots, an immoderate degree of dryness is apt to be produced there, which may induce the amateur to give water at a time when it would be very hurtful to the plant.—*Dr. Regel.*

(To be continued.)

ASPECTS OF VEGETATION.

MADAGASCAR.

SOME of the aspects of vegetation in Madagascar are of so peculiar a character that it may be worth while to allude to them again. Of the growth of *Angræcum superbum* on *Strichnos* trees we have already given an account (see p. 509). Another species of the same genus, viz., *A. sesquipedale*, is also parasitical on trees in Madagascar. The Rev. Mr. Ellis says:—"On more than one occasion I found this singular Orchid growing splendidly on the trunks of decaying or fallen trees, as shown in the accompanying engraving, and sending its tough roots down the trunk to the moist parts of the vegetation on the ground. I found one decaying tree of large size lying on the ground almost overgrown with grass and ferns, on the rotten trunk of which *A. sesquipedale* was growing most luxuriantly. The roots, which had penetrated the soft trunk of this dead tree, were white and fleshy, while the leaves were of unusual length, and comparatively soft and green. There were, however," he adds, "neither flowers nor flower-stalks on any of the plants growing in the rich vegetable mould furnished by this old dead tree."

As regards *Angræcums* found on the ground, Mr. Ellis says the finest were to be seen growing near the roots of leafless bushes, and having their own roots surrounded by long green grass. The bushes themselves were growing in loose sand. The very healthy state of these plants tended to induce a belief that a moderate amount of shade and moisture suits them better than the dry exposed branches or trunks of dead trees, on which they are so often found growing.

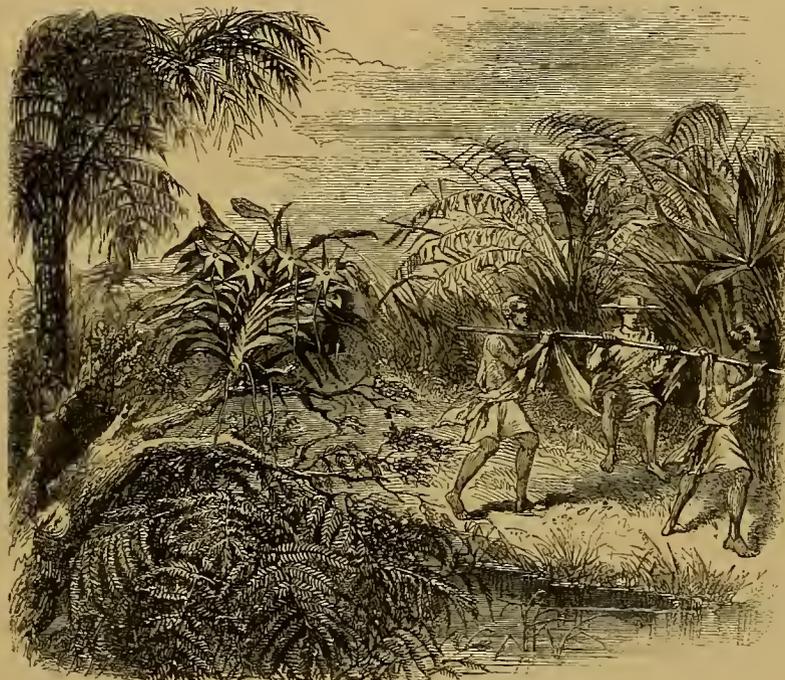
The yellow-flowered *Angræcum crassum* and *A. citratum* were also found by Mr. Ellis in Madagascar, as well as many other interesting Orchids and other plants. "Amongst the latter," he says, "my attention was arrested by a new species of *Pandanus*, with dwarf stalks and broad pointed leaves. Amongst the varieties of indigo, a plant with a pink or red flower was unusually attractive; while a little modest blue *Tradescantia*, somewhat resembling the wild forget-me-not, enlivened the borders of the path. But the greatest rarity was a kind of large-growing heath, with pink or lilac-coloured flowers. In some places I also saw large masses of creeping ferns entirely encircling the trees. The greater part of the

road, however, had been over sandy plains, traversed by ridges or high banks of sand, which had at one time been the boundary of the sea. We also passed through regions of dead, blanched, barkless forest trees, still standing; the only signs of life amongst them being a few orchids or ferns growing in the forks of their trunks and branches. Sometimes we passed through a tract of thick verdant forest of large timber; but in general there were ponds or stagnant marshes, on both sides of the path, sometimes overgrown with long grass or rushes. Along the borders of the running streams, I saw numbers of the tropical lettuce, *Pistia Stratiotes*, growing very freely."

GARDENS AT RAILWAY STATIONS.

BY JAMES M'NAB.

OF late years a great improvement has been effected in reference to these, and I am glad to observe that the taste for station embellishment is greatly on the increase, as we now see one railway vieing with another for this laudable end. Almost all the extra decoration is due to the horticultural taste of the station-master or those under him. I do not quite agree with all the freaks exhibited on roadside stations; still, such freaks in the meantime ought not to be objected to, as they often lead to other and better suggestions. When we consider the great diversity in the tastes and ideas of those for whose gratification they are chiefly intended, allowance must be made by the public for the primitive notions which are displayed in some of them. The great diversity in localities and soils where intermediate stations have to be placed, must in many instances call forth a great amount of ingenuity from those in charge, so as to turn them to the best account. It is to be hoped that railway directors will



Angræcum sesquipedale, as seen in Madagascar.

encourage station gardens as much as possible. In all new-formed stations the *employés* would do well to examine as many as they can, and select the good points of each. Some are, perhaps, too much hampered for room, and in some we find a wall of rock rising almost perpendicularly on each side. Such stations have charms unseen, and, in the hands of a skilful garden architect, could be made to assume forms at once interesting and characteristic of the district. Such schemes would take years to accomplish, but as stones are always in demand, no matter of what kind, their gradual removal would always be facilitating the end in view. Many of these stations, where the rocks are not excessively high, could have the materials removed down to the surface level for 70, 80, or 100 feet in breadth, till the time arrived for their final arrangement. Instead of upright rocky walls, having a narrow platform and the rails between, where the sun rarely penetrates, we ought to see sloping rocky banks, made as irregular as it is possible to work them. The hollow places formed could be filled with soil, to be planted with coniferæ or shrubs and flowers suitable for rocky places. It is greatly to be desired that civil engineers will consider all these hints when designing new station buildings.

In the station building department a great improvement has of late been effected, but much still remains to be done. Any one travelling over the kingdom cannot fail to observe the comfortable-looking

stations on many of the English lines, where brick and white stone are employed, and surrounded by well-kept grass and shrubs. If a little more ground could be allowed round some of the Scottish stations, they would soon be able to vie with the English in every respect. When the train comes to a standstill, it is certainly pleasant to cast the eyes on these delightful spots, particularly after a weary run of many miles, and then rest contented till arriving at another station. By a continued improvement of the kind suggested, delicate eyes may be kept at rest, knowing that something more pleasing is in store for them at the next stopping-place, instead of straining them on tree stems and telegraph posts.

THE FRUIT GARDEN.

PACKING FRUIT.

IN these days, when a large portion of the produce of the garden has to be sent by rail, the question of packing is one of no little importance. Having had some experience in packing fruits, flowers, and vegetables for travelling long distances, I propose to say a few words on the subject.

The fruit which is generally wanted in greatest quantity, and which bears carriage worse than almost any other, is the strawberry; and some varieties, however, stand carriage better than others, and among these I may mention British Queen, the Pines, Prince of Wales, Sir Harry, and others. Still, I have packed all sorts for many years; and, as a rule, they arrive in London in very good condition. The tin boxes we use for this purpose are one foot square, and from one and a half inch to two inches deep. When about to be filled, a thin sheet of cotton wadding is laid on the bottom of the box, and on this a layer of soft vine leaves. The berries are then laid hold of by the footstalks, and laid in one by one, as nearly on their hase as the footstalks will permit; a soft strawberry leaf is laid between each berry, and they are wedged together as tightly as can be done without actual crushing. When all have been laid in they are covered evenly over with strawberry leaves, and another sheet of cotton wadding (sufficient with the leaves to hold all firmly in their places) is laid on the top, and the lid shut down and secured. The condition of the leaves for putting between the berries is of some importance. No leaves of any kind are fit for this purpose when just pulled; they are then too hard, and do much injury. For this reason we have the strawberry leaves pulled the night before and strewed over the fruit-room table; by morning they are limp and flaccid, and can be used with safety. It is a common practice to wrap each berry in a leaf; but it is not a good plan, for the less the fruit is handled the better; and the plan of laying a soft leaf between each fruit, as I have described, does away with the necessity of handling the berries at all except by the footstalks.

As regards peaches they require as much care in gathering as in packing, for the slightest bruise will appear an ugly blemish a few hours afterwards. Have a tray lined with a thick layer of wadding beside you when going over the trees; try only those that look ripe, and, taking the peach gently in the palm of your hand, bring the fingers and thumb under its hase, and if it does not come away with a slight effort leave it. What are ready, set on the tray, and do not handle them again till they are packed. Some have their peach boxes divided into compartments about four inches square; but it is not an economical plan, for only one peach, be it large or small, can be put into a division, and they are too often bruised in getting them out again. The boxes should be of tin, and from twelve to eighteen inches square, and four and a half inches deep. In packing lay a thick piece of wadding on the bottom, and line also the sides; then take a square piece of wadding of the requisite size, lay upon it a piece of the softest tissue paper, and on this set the peach; fold the wadding up over it, and set it on its base in the box at one corner. Fold up the others in the same manner, pack them closely together, lay a sheet of thick wadding on the top, shut and fasten the lid securely, and they are safe from any ordinary danger.

Few fruits bear carriage better than grapes, and yet, strange to say, they are often much damaged in their transit, for the simple reason that they are seldom packed as firmly as they ought to be, through fear of crushing them, though the grape will stand a wonderful amount of pressure before breaking, and the bunches have a certain elasticity about them which protects them. Boxes eighteen inches by one foot, and six inches deep, are a convenient size. We use soft paper shavings or wadding for packing them, first wrapping the bunches in soft drapery or tissue paper, and twisting it at each end; they are then wedged together with a few shavings between the bunches, and a layer below and above all, in sufficient quantity to hold them securely in their places, when the lid is put on. All

our packing materials are returned in due course, and it is seldom that there is the slightest stain from a broken berry on the grape papers. Nor does the bloom suffer to any serious extent by this mode of packing, if done with ordinary care. It is friction which rubs the bloom off most, but firm packing prevents this to a great extent.

Figs are precarious things to handle in packing if perfectly ripe, as all figs ought to be before they are sent to table. Their skin rubs off with the slightest touch. They should be detached from the tree with great care, and they should be packed like peaches; but, instead of using tissue paper inside the wadding, use a soft vine leaf in a flaccid state and fold the fruit carefully in it, and pack tightly, using plenty of wadding.

Raspberries when sent for dessert are packed like strawberries. Other small fruits, such as currants, gooseberries, and cherries, will travel well without packing further than a layer of leaves top and bottom. Plums will travel well in a bed of soft, clean leaves, and covered with the same, but the bloom of the fruit is easily rubbed off. It is a common plan, and a good one, to pack the different boxes of fruit in one hamper when sent off. Sometimes they can be sent in the vegetable hamper. Either way, do not let the hampers be unwieldy and inconvenient to handle, and the chances are that the damage, if any, will be less than it otherwise would be. J. S.

THE MARKET-GARDEN STRAWBERRY STRIKE.

A GREENGROCER'S life just now, says the *Telegraph*, must be rather too exciting to be pleasant. Vegetables are daily advancing in price, and the indignant remonstrances of *Materfamilias* intensify with every new rise. The meek purveyor of vegetables would never finish his daily course had he to explain at every house door the roundabout circumstances which have occasioned so unseasonable a dearth of garden produce. Were purchasers to be dropped down for half an hour in the rural lanes of Fulham, the mystery would be explained to them in a trice. Any of these corduroy-trousered men with their hands deep in their pockets, and a sad kind of scowl on their faces, would prove voluble on the subject. They are market gardeners on strike, and very melancholy they do look, prowling about on the wrong side of the hedge. They have been executing that penitential promenade for fully a fortnight, and as yet they don't see how or when it is to end.

Fulham has suffered from similar insubordination once before; on that occasion it succeeded, and the matters in dispute were comfortably settled. And so they have gone on till about three weeks ago, when the word was passed that on the following Thursday the men in each garden should wait upon the masters, and intimate that after Saturday night a halfpenny an hour more would be wanted. The scheme was carried out with entire unanimity, and on the Monday morning every garden in the district was deserted. The masters had peremptorily refused any rise, or any entertainment of the question. Some of the men crossed the river to Barnes, and sought employment there; but a hint had preceded them from Fulham, and Barnes would receive no firebrands. This "blackballing" was viewed with bitter resentment. A few single men packed up their goods and crossed the Channel to Ireland; but the majority, being married, chose to remain at home, lounging about among the lanes. That has been their daily occupation for a fortnight; and all I could observe of them implied that they were doing it very decorously indeed. A master with whom I spoke afterwards admitted the fact of their good behaviour, but transferred the credit from the men themselves to the police—of whom, during the afternoon, I saw two.

Covent Garden had to be supplied from these deserted lettuce-grounds and strawberry-beds. Cauliflowers and radishes were at their best. All garden produce was at a premium, and the masters had to get it taken off the ground somehow. In some cases they buckled to the work themselves. After a day or two they managed to beat up a small troop of boys and girls in the village. All the while agents were scouring the adjacent districts for men. Last Sunday morning the fine warm weather had brought things to a crisis. Fruit must be picked, and vegetables cut, else they would spoil. Vans and carts were sent into the odorous purlieus of Seven Dials and Drury Lane for the halt, the lame, and the blind. The *sans culottes*—enticed from their reeking courtyards by the promises of a free ride to-and-fro, a warm dinner, as much fruit as they could eat, and a trifle in Queen's coin—turned out in shoals, and made a prosperous journey to Fulham. It was reported on Sunday night that the strike hands assailed their successors with yells and hootings which threatened to end in more violent proceedings. There was even a rumour of incendiarism in connection with a fire which happened at a gardener's house. I questioned my authorities on these reports, and they were profoundly disgusted. The eldest acknowledged that when the vans arrived at Parson's Green there had been

some "hollerin' and hootin'," but the ill-used man interposed that it was only "a bit of amusement loike." The Seven Dialites went peaceably to work, and some of them have been carted out and in daily since. They have taken the place of the women rather than of the men. In one or two gardens male substitutes had been found within the first day or two—farm labourers brought up from the country.

They did not give up hope when they threw down their spades. There were no "agitators" in the district to mount the stump on their behalf; but a more judicious champion came forward in the Vicar of Fulham. Either of his own accord, or at the instance of the Rev. Father Bond, to whose congregation many of the men belonged, he went round among the masters to ascertain their real disposition on the subject. It was unrelenting, however; and the kindly vicar carried back to the priest a discouraging answer. Anticipating another issue, the men had clubbed together a few pence, and got a hand-bill printed, calling a public meeting in the schoolroom at St. Thomas's Church. The bill stated for them "that they most respectfully invite the master-gardeners to attend, pledging themselves to pay them every respect, and assuring them that their only object in calling the meeting is to bring about a peaceful settlement of the differences now existing between them." One master accepted the invitation, and he represented only himself. There were excuses offered afterwards by others, that the men should have known Friday was a very busy night—that they should have given longer notice—and so on. The intended conference was a failure; and Pat is scratching his head about what to do next. Fulham is little else than a market garden, and, except in the brick-fields, he has very little chance of other employment. He is attached to the village, albeit the rent of a couple of rooms for his family costs him more than a fourth of his wages, and like many another householder, he wishes to have the increased price of coals and bread taken into account on his behalf.

In order to test the men's statements, and to be placed on the masters' standpoint, I called on the owner of one of the largest gardens. His tone in speaking of the strike was strikingly akin to that of the Warwickshire farmers in March. They could not pay more wages, he said; and they wouldn't. Some of them would rather give up their gardens first, or turn the plough into them. "Why," he asked, "did they not come forward in a manly way and give us a week's notice? I have heard several people say they will not take back their old bands on any terms. One is selling off his stock and crop now, and means to let his place. In Fulham, where digging has been all done by spade hitherto, we shall have to use the plough, and the men will see what good they have done themselves next winter, when they are told to take fourteen shillings a week, or stay at home." I was surprised, however, at the answer to an inquiry about the quality of Irishmen as labourers. He would not deny that they were first-rate labourers—or at least had been till this summer. They learnt the business very quickly, and they were clever at turning from one kind of work to another. They were particularly suited for a market garden, where they might have to be at half-a-dozen different jobs in the course of a day. Their gravest fault in the eyes of their ex-employer was that they were not vigilant in driving away juvenile trespassers from the lettuces. These labourers—whose occupation implies that they must be more than merely muscular machines, and whose lodging costs them more than a fourth of what they earn—have thrown themselves idle because they want a pound a week to live upon, instead of seventeen shillings and sixpence.

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Disabled Peach and Nectarine Trees.—I have some Peach trees which last year made very excellent growth, and which promised to produce a good crop. The bloom was most profuse, but Jack Frost put a stop to my getting any fruit. Then came swarms of aphides, which threatened to take trees and all. Having a liberal supply of Pooley's Tobacco Dust and a distributor at hand, I thoroughly dusted the trees, with a determination to either win or lose. I was successful; now they are thriving grandly, and no other intruders have ventured to attack them. I believe, however, that I should have lost my trees had it not been for this antidote.—THOMAS J. CAPARN, *Newark-on-Trent.*

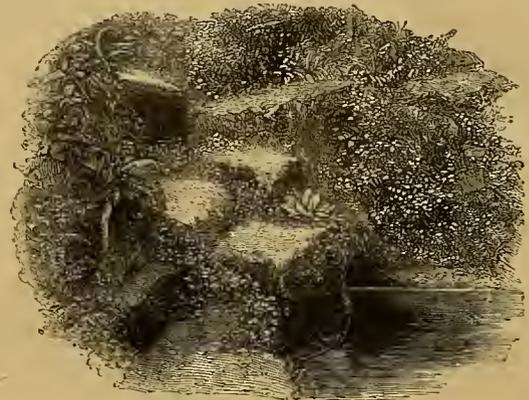
Gooseberry Training and Protection.—I lose nearly all my gooseberries when ripe, from want of some efficient means of protecting them from the birds. Will you kindly tell me how to protect them in the most efficient way? A neighbour of mine trains his in a concise way, and covers each bush with some galvanized wire-netting.—S., *Highgate.*—[A very excellent way of growing the gooseberry, and at the same time protecting it from frost, is to train the shoots on a low trellis, made, say, of three lines of thin galvanized wire, rising three or four feet high. These should be fixed in lines at three feet apart, and the plants placed rather closely, so that the trellis may be covered quickly and well. By this arrangement a net may be stretched over a number of lines with less trouble than would be required to "net" half-a-dozen bushes on the old plan; while the berries may be gathered as readily as if the bushes were not netted at all—the gatherer entering at one end and passing readily between the lines.]

THE FLOWER GARDEN.

THE ALPINE GARDEN.

(Continued from page 606, Volume I.)

In the construction and planting of every kind of rockwork it should be distinctly remembered that every surface may and should be embellished with beautiful plants. Not alone on rocks or slopes, or favourable ledges, or chinks, or miniature valleys, should we see this kind of exquisite plant-life. Numbers of rare mountain species will thrive on the less trodden parts of footways; others, like the two-flowered Violet, seem to



Steps in Alpine Rock-garden.

thrive best of all in the fissures between the rude steps of the rockwork; other dwarf succulents delight in gravel and the hardest soil; others will run wild in any wood or among low shrubs near the rock-garden.

The accompanying figure is from a photograph of the lower part of rude steps ascending abruptly from a deep and moist recess in a rock-garden. It shows very imperfectly—no engraving could show it otherwise—the crowds of lovely plants that gather over it, except where worn bare by feet, thriving year by year as freely as they do on the most favoured spots in the Alps.

It can scarcely be necessary to add that we cannot too carefully avoid any cemented work which would in the least degree interfere with this happy tendency. In cases where the simplest type of rockwork only is attempted, and where there are no steps or rude walks in the rock-garden, the very fringes of the gravel walks may be gracefully enlivened by allowing such plants as the dwarfed Sedums to become established in them. The alpine Linaria is never more beautiful than when self-sown in a gravel walk.

Another very important principle to bear in mind in forming the rock-garden is, that, as a rule, much more vegetation than rocks should be seen. Where vast regions are inhabited by alpine plants, acres of crags with a stain of flower or fern here and there, are very attractive and imposing parts of the picture; but in gardens, where our creations in this way can only be Lilliputian, an entirely different method must be pursued; except in places where great cliffs are naturally exposed and even in this case an abundant drapery of vegetation is desirable. A rockwork is rarely seen in which plants predominate as much as they ought. Frequently masses of stone are met with under this



Alpine Flowers (a Garden Sketch).

name with an occasional tuft of vegetation, every chink and joint between the stones being thus exposed. This should not be so; every minute chink should have its little line of verdure; and in this way we should not only have more plants, but hide the artificial nature of the structure. Where the ground is low and bank-like, there really is not the slightest necessity for placing stones all over the surface; an occasional one cropping up here and there from the mass of vegetation will produce the best effect. Alpine flowers are often seen in multitudes and in their loveliest aspect in some little elevated level spot, frequently without a rock being visible through it, and, if so, merely peeping up here and there. They are lovely too in the desolate wastes of broken rock, where they cower down between the great stones in isolated, lonely-looking tufts; but it is only when Gentians and silvery Cudweeds, and minute white Buttercups, and strange large Violets, and Harebells that waste all their strength in flowers, and fairy Daffodils that droop their heads as gracefully as Snowdrops, are seen, forming a dense turf of living enamelled work, that alpine flowers are seen in their fairest aspects. Fortunately the flowery turf and stony mound



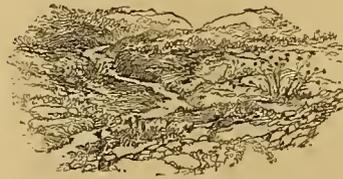
A little Upland Valley in a Rock-garden. (From a photograph.)

are much more possible to us than the bare moraine blocks or arid cliffs. The accompanying illustration is a view of a little elevated stony valley in an artificial rock-garden. Its surface is composed of comparatively large stones, but between them there are chinks leading to deep masses of earth, broken stones, and grit, and from thence issue vigorously tufts of the Moss Campion and other plants, which lap over the hard edges of the stones, and become at all seasons cushions of glistening verdure—in spring and summer of innumerable starry flowers. Stone and plants are seen in about equal proportions, and the effect is of the most pleasing kind.

In cultivating the very rarest and most minute alpine plants, the stony, or partially stony, surface is to be preferred. In their case we cannot allow the struggle for life to have its own relentless way, or we should often have to grieve at finding the *Eritrichium* from the high Alps of Europe overrun and exterminated by a dwarf American Phlox, and similar cases. Perfect exposure is also necessary to complete success with very minute plants, and the stones are very useful in preventing excessive evaporation from their roots. Few people have any conception of the great number of alpine plants that may be grown on the fully exposed level ground as readily as the common Chamomile; but there are, on the other hand, not a few that require some care to establish them, and there are usually new kinds to be added to the collection, which, even if vigorous ones, should be kept apart and under favourable conditions. Therefore, in every place where the culture of alpine plants is entered into with zest, there ought to be a select spot on which to grow the most delicate, most rare, and most diminutive kinds. It should be fully exposed, and while sufficiently elevated to secure perfect drainage and all the effect desirable, should not be riven into miniature peaks or crags or cliffs.

The greatest watchfulness should be exercised over the plants on all such structures as this. They will not perish from cold or heat or wet, if properly planted, but many of them are so minute that they are not capable of affording a full meal to a browsing slug, and accordingly often disap-

pear during a moist night. Now as our gardens abound with slimy creatures that play havoc with many subjects colossal compared with our alpine friends, it is clear that one of the main points is to guard against slugs, and as far as possible against



Water-fence in an Alpine Garden.

worms. Mr. Backhouse has very cleverly fenced off the choicest parts of his rock-work from them by a very irregular little canal, as shown in our illustration. It may be so arranged and cemented that, while not an eyesore, and perfectly water-tight, no slug will cross it. It thus becomes

a much easier task to guard the plants from injury than when they crawl in from all points of the compass. But even with this precaution, it is necessary to search continually for snails and slugs; and in wet weather the choicest parts should be searched over in the evening, or very early in the morning; with a lantern, if at night. Sir Charles Isham, who is an enthusiastic cultivator of rock-plants, says that he not only protects toads, but does not forget to lay stones so as to form little retreats for them underneath. They prefer a stone just sufficiently raised to crawl under, and must do a deal of good by destroying slugs, &c. He also protects frogs and all carnivorous insects. Ceaseless hand-picking is the best remedy for slugs, and where not done, there is little hope of succeeding with many subjects, at least in regions where slugs are as abundant as we usually find them in gardens.

(To be continued.)

ARALIA JAPONICA.

A VALUABLE kind, quite distinct, with undivided, fleshy, dark-green leaves. It is usually treated as a greenhouse plant, but is hardy, and makes a very ornamental and distinct-looking shrub on soils with a dry porous bottom. It grows remarkably well in the dwelling-house; in fact, it is one of the very few plants of like character that will develop their leaves therein in winter. Not difficult to obtain,



Aralia japonica. (After Vilmorin.)

it may be used with advantage in the flower garden or pleasure ground among medium-sized plants—say those not more than a yard high. It would form striking isolated specimens on the turf, and is also very suitable for grouping. It is commonly known in our gardens as *A. Sieboldi*. About London it may be noticed thriving in various districts, as for example, in the Regent's Park, and in the Duke of Buccleugh's garden at Montague House.

Tropæolum polyphyllum.—A hardy species belonging to the tuberous-rooted *Tropæolums*, viz., *T. polyphyllum*, is now an attractive object in some of the London nurseries, notably the Exotic Nursery, Tooting, and the Wellington Nurseries, St. John's Wood. At the first-named establishment it is used as a low wall-plant, where

its showy, pale orange-yellow blooms are so freely produced as to nearly hide the foliage; while at the latter place it is allowed to trail over the ground, a position in which it flowers equally well. It is a capital subject for low trellises, rockwork, low walls, or warm banks, and succeeds best in rich sandy loam.—T. S.

Angry with Exotics.—Since we possess in our own land such a wealth of delicate flowers in harmony with our dispositions, and so subtly interpreting our European nature, why do we roam over the whole earth in quest of decorations for our gardens? Within the last half-century the face of Europe has been changed by the sudden, reckless, and uncontrolled invasion of exotics. The acacia we had before I was born. During my childhood, I witnessed the introduction of the Hydrangea; in my youth, of the dahlia; in my manhood, of the fuchsia, and simultaneously, of a hundred thousand plants. Our parterres, loaded and overloaded, remind one of the heavy, gaily-coloured shawls which have destroyed the genuine Cashmere. The seasons fail in their due effect—their deep and native poetry—because troubled by the unexpected apparitions of strange flowers, which often come at inopportune times, are ignorant of the periods of our year, and, for example, beam gaily and smilingly in the melancholy moods of autumn. The time is wan and pathetic; but the Antipodean flora thinks it is spring, and vexes our souls with its bravery of colour. The eye, nevertheless, accustoms itself to their fantastic conceit, as the ear becomes habituated to brazen instruments; and thus our ruder senses embrutify the soul, for a certain kind of pleasure which is without taste and without memories. Surely, a more artistic age will come, when these intruders shall no longer force themselves upon us, as they now do, with eager and abrupt impertinence. We shall no longer admit a plant without knowing something of its relationships, and even, as far as possible, of all the great local harmonies by which it is circled.—*Jules Michelet.*

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Podophyllum Emodi.—I shall be glad of any hints as to the culture of this peculiar plant. Also as to when it flowers and fruits.—G. P.—[This plant succeeds perfectly in peaty soil, if planted in warm sheltered spots. In such positions it is a capital subject for the margins of beds of American plants. It may be increased by seed or division.]

Dwarf Rock Harebells.—I am planting an old chalk pit with these pretty plants, and shall be glad if you or any of your readers will give me the names of all the distinct dwarf kinds that are worthy of a place.—Wm. EGINGTON.—[*Campanula cespitosa* and its vars., *carpatica* and vars., *Elatines*, *fragilis* and its vars., *hirsuta*, *garganica*, *isophylla*, *marialis*, *pulla*, *rotundifolia* and its vars., and *turbinata* are all excellent kinds, well adapted for the purpose you require.]

The Corn-Flower (*Centaurea cyanus*).—Few persons seem to have any just idea of the value of this as an early summer plant, when sown in autumn. The variety in the colours of the pretty flowers is quite charming. The blooms are among the best for cutting. Self-sown plants, or those sown in the autumn, make a lovely display on strong soils. No garden in which flowers are valued in the early summer, should be without a mass or a few tufts of it.—W. R.

Eriogonum umbellatum.—I noticed a fine plant of *Eriogonum umbellatum* the other day flowering more profusely than I had hitherto seen it. The plant I allude to was about fifteen inches across, throwing up numerous flower stems six to eight inches high, on which were produced its golden yellow blooms in umbels four inches or more across, forming a neat and conspicuous tuft. This plant I have usually observed flowering very sparsely; but when seen in the fine condition above named, it is worthy of a place on any rockwork or border.—S. W. K.

Solanum jasminoides.—As a wall-climber this is a plant that is not at all sufficiently appreciated; when seen as I have recently seen a specimen on a wall at Kew it is a grand object. There it thrives perfectly, and has lived out and flowered for many years, and has this year produced its pretty white flowers so profusely as to form a very conspicuous object, whether seen at hand or at a distance. It is a native of Chili, and is worthy the attention of anyone who is in need of wall plants; it would also be useful for training up pillars, verandahs, trellises, &c. It likes good sandy loam.—U.

Lasthenia glabrata.—This hardy annual composite has been flowering freely in the Botanic Gardens, Kew for these past two months, and is now a perfect mass of rich orange yellow blossoms. It grows about fifteen inches in height. The plants at Kew are evidently from seeds self-sown last autumn; and where an early summer display is wanted this would form a capital subject if sown in autumn. Patches of it in mixed borders would come in along with early Phloxes, Alyssum, Iberis, Wallflowers, &c.; it certainly far surpasses any of the *Doronicums*, which often find a place in such borders.—T.

Agapanthus umbellatus.—I lately saw at Ravensbourne Park plants of this lovely old-fashioned Lily, that had stood out in the open ground all the winter, and which are now pushing up strongly. The soil is stiff clay; aspect east. I have somewhere read that this plant ought to be allowed to have plenty of light during the winter, but here I saw a fine lot that had been wintered in an ashpit, and I was informed that thus treated they flower profusely every season. This Lily may be wintered successfully under the stage of a greenhouse, or even in a cold pit, and never fails to bloom freely during the summer-time.—J. C.

Rare Alpines at Benthall Hall.—*Cortusa Matthioli*, a rare and valued alpine, sometimes considered difficult to grow, and uncommon, grows perfectly here in a border of sandy peat. The fringe of a bed of American plants suits it admirably. The Lion's-foot cudweed (*Gnaphalium Leontopodium*) also grows well out of doors here in ordinary moist soil. The fine yellow *Anemone palmata*, a superb spring flower, shows itself to be an excellent border plant, its handsome leathery leaves forming large tufts which have flowered freely. The Sikkim primrose (*Primula sikkimensis*) also grows well in beds of peat in this part of Salop.—W. R.

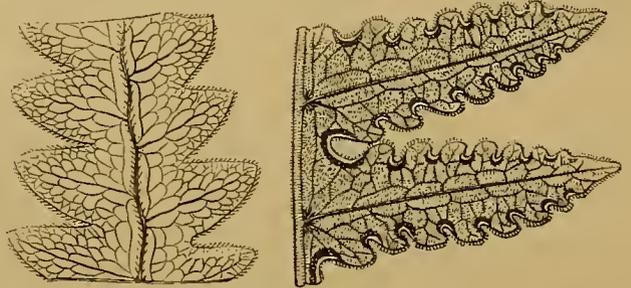
Hardy Palms.—Your illustration (p. 479) of *Chamarops excelsa* leads me to inquire whether there are more hardy Palms than one? I have always understood the plant just alluded to, to be *Chamarops Fortunei*, which in some catalogues is bracketed *excelsa*. In others, and in your descriptive list of Palms, they are distinct. I have also been shown the two in nurseries, and their appearances were very different. As I propose planting some out it is of importance to myself, or anyone similarly inclined, to get the right one. I should therefore be obliged if you would decide this matter for me.—HERR F. [Mr. Croucher and others think that *Chamarops Fortunei* and *excelsa* are distinct; M. Carrière that they are one; and we have never seen any evidence that they are distinct.]

THE LIBRARY.

GARDEN FERNS.*

THE book which we are about to notice is not a very recent work, six years having elapsed since its publication. It is, however, part of the programme which we have laid down for our guidance, to bring before our readers such works as are likely to be of the greatest amount of practical use to them; and, in the present instance, we know of no more recent volume which is superior to Mr. Smith's "Ferns, British and Foreign," as a handbook for cultivators, whether as regards the practical or the scientific knowledge which it contains. That it is not so well-known as it ought to be is evidenced by the requests to recommend a book on ferns which we so frequently receive; and we believe that we shall be doing a service to many in directing their attention to this little volume.

Few authors can lay greater claim to be considered as an authority upon any subject than can be brought forward by Mr. Smith to support the position which he has taken as a writer on ferns. From the year 1822 up to 1864, a lifetime of many men, he has watched and superintended the formation of the now wonderful fern collection at Kew. At the former date he tells us that the entire Kew collection of exotic ferns did not exceed forty species, while, in 1857, in his catalogue of cultivated ferns, five hundred and sixty are enumerated as known in British gardens, most of which were at Kew. "Since the last mentioned year, the constantly increasing demand for ferns, consequent upon their wider cultivation, has greatly stimulated the introduction of new ones, and our collections have increased at the rate of about fifty species a year." The Kew collection dates from 1775, when Francis Masson, "one of the earliest, if not the earliest, collector sent out from Kew, sent home several ferns from the Cape of Good Hope and Madeira." The first introduction of Australian ferns was about 1808, when George Caley (erroneously



Portion of barren and Fertile Fronds (Natural size).

named Alexander in the work before us) was sent by Sir Joshua Banks to New South Wales; "to him we owe *Platyterium alaicorne*, *Doodia aspera*, and *Davallia pyxidata*." The first colonial garden from which ferns were received at Kew was that of Ceylon, from which Mr. Alexander Moen, the then director, sent home a collection of plants, among which was *Nipholobolus costatus*. Singularly few Cape ferns are in our collections, although the fern flora of Southern Africa is extremely rich. Jamaica has supplied more ferns to Kew than any other part of the western hemisphere, a fact mainly due to the energy and perseverance of Mr. Nathaniel Wilson, the island botanist and director of the botanic garden. The West Indian Islands have, indeed, contributed a very large proportion of the tropical ferns now in cultivation, as comparatively few have been received from the continent of America.

Turning to those who have been most prominent in introducing ferns, Messrs. Loddiges, of Hackney, were the earliest to form a collection, although the old-established firm of Lee & Kennedy, of Hammersmith, is recorded in the second edition of the "Hortus Kewensis," as having introduced *Polypodium asplenifolium* and *Asplenium monanthemum* in 1790. But to Messrs. Veitch & Sons, of Exeter and Chelsea, must be assigned the credit of having introduced the greatest number of these plants; the collectors employed by them in Chili and other parts of the American continent, in India, the Malayan continent and islands, and in Japan, having sent home numerous fine species; while through other sources they have obtained many additions from Australia, New Zealand, and other countries.

It would occupy too much of our space did we attempt to enter more fully into the chapter on the introduction of exotic ferns from which the preceding facts are, for the most part, taken. The chapters

* "Ferns, British and Foreign; their History, Organography, Classification, and Enumeration." By John Smith, A.L.S., Ex-Curator of the Royal Botanic Gardens, Kew. London: Robert Hardwicke.

on organography, and the genera, and classification of ferns, will well repay careful perusal. A word, however, must be said as to the figures, by one or more of which each genus is illustrated, and of which we are enabled to give examples; they are in most cases, although small, and of portions only of fronds, sufficiently characteristic, and form an important adjunct to the book. The genera only are described, the species being arranged in groups marked by one or more distinctive features, with details of geographical distribution, and copious references to figures and descriptions. The chapter on cultivation is simply invaluable to every cultivator whether on a small or large scale.

The book, in short, is the work of a man thoroughly conversant with, and enamoured of his subject; and, as a natural consequence of these conditions, it is one which will be of practical use to all who may purchase it.

PUBLIC GARDENS.

THE BOTANIC GARDENS, EDINBURGH.

NOTES BY A VISITOR.

EDINBURGH is, or will soon be, at the height of its tourist season. Already the "one side of the one street" in the town is thronged by strangely-clad and marvellously-battled pleasure-seekers of every civilized nation; and if among the crowds of nomads who annually sojourn in the caravanserais of Princess Street there are any who are—scientifically or unscientifically—fond of trees and flowers, let them not leave the town without visiting the Botanic Gardens in Inverleith Row, for they are worthy of the noble city of which they are a feature. No sooner is the modest gateway entered than the visitor may believe himself to be a hundred miles from the busy city, for he may wander for hours in sunny glades, and find at each turn new objects of beauty and interest, new vistas of bright colour and fresh verdure.

On the upper or northern terrace are situated the palm house and the principal plant houses, which at present are being largely added to, and which contain a splendid collection. These were closed at the time of my visit the other day; but this I hardly regretted, as it left more time for the outdoor part of the gardens. At the back of the range of houses is a long walk, with a wide border upon each side filled with beds of herbaceous plants. Just now the most conspicuous masses of colour there are formed by Delphiniums, *Gladiolus byzantinus*, *Pyrethrums* in great variety and of singular beauty, *Agrostemma coronaria*, whose bright rosy flowers show so well against the glaucous, or hoary foliage, *Lilium monadelphum*, and *Hemerocallis*. The brick wall which forms the northern boundary of the garden is at the back of one of these beds, and supports an interesting collection of climbing plants and trained shrubs. Along the front of the plant houses is a mixed border with some nice plants in it, notably one labelled *Cosmea diversifolia*, with striking flowers. The bank on the south side of the terrace contains beds of American and other flowering plants; below which again is an extensive and well-arranged collection of British plants. The remainder of the northern half, down to where used to be the wall dividing the Botanic from the Experimental garden (which wall is now removed with happy results), is occupied with beds of roses, and beds containing plants arranged in Natural Orders. The most showy of these at present are the *Liliaceæ*, the *Iridaceæ*, from the stately *Iris pallida* to the delicate *sibirica* and the curious *atrorubens*, and the *Saxifragaceæ*. The whole space here is agreeably ornamented with pines and deciduous trees singly and in groups. We now pass the rather shabby little piece of ornamental water, into the old Experimental garden, where there is a large collection of American shrubs and bedding-out plants. Another large plant house, at the back of which, on the south side, is one of the newest and best features of these grounds, namely, the rock-garden. Comparisons are to be avoided as a rule, yet one involuntarily calls to mind the unfortunate constructions which go by the same names in some other botanic gardens. This one is very extensive, and contains an interesting collection of alpine and other hardy plants. It is, perhaps, nay, certainly is, more formal in design than would be desirable in a private garden, as each

species occupies a rectangular compartment and has a label of its own, which necessarily destroys any illusion; but that is probably found necessary in a scientific institution; and for the most part the plants are growing so luxuriantly as to hide the margins of their cages and the labels. The general outline and design of the rockery leave little to be desired.

The most attractive objects on it at present are certainly the magnificent *Saxifrages* in full bloom. There are numerous fine specimens of *S. nepalensis*, *S. Cotyledon*, *S. intacta*, and *S. pyramidalis*; and every flower-lover who is without them, would doubtless on seeing them, determine to be without them no longer. The too-seldom-seen *Delphinium Belladonna* (pale blue larkspur) is also a great ornament to the higher points of rock. Among many gems in full bloom may be noted as rare and desirable *Calochortus luteus*, with beautiful waxy yellow flowers; *Dianthus alpinus*, of which there were several seedling plants; *Epilobium Dodouæi*, a most brilliant dwarf, large-flowering Willow herb, about six or eight inches high; *Myosotis Imperatrice Elizabeth*, a hybrid, apparently of *M. azorica*, of erect habit, and coloured like *Gentiana verna*; *Cheiranthus longiflorus*, a dwarf wallflower, covered with shaded purple and reddish flowers; the lovely *Aquilegia cærulea*, which should be more sought after; *Chrysobactron Hookeri*, with clear, rich yellow spikes; and some very pretty *Babianas*. Many *Sedums* and *Sempervivums* are in, or coming into, flower (note the strangely disproportionate blossoms of the quaint cobweb houseleek, *S. arachnoideum*), and the lovely Indian poppy, *Meconopsis aculeata*, has just passed over.

These notes are sent not as an account of these gardens—may we hope for that some day from a pen that can do them justice, graphically and scientifically—but as a sort of rough-and-ready guide to some of the many visitors who are now in Edinburgh, and who might otherwise feel adrift on entering the grounds, as there appears to be no catalogue or guide obtainable at the lodge.

SALMONICERS.

THE BOTANIC GARDEN, GLASNEVIN.

The Glasnevin Botanic Garden is situated on the north side of Dublin; but in the immediate suburbs, being only two miles from the centre of the city, on the road leading to the Naul, Drogheda, and the northern counties. We learn from the director's "Handbook to the Garden," that it was originally founded, about the year 1790, for promoting scientific knowledge in the various branches of agriculture and planting, as well as for fostering a taste for practical and scientific botany. The first grant for forming the garden was made by the Irish Parliament in that year, and ever since annual sums have been voted for its maintenance by the Irish and Imperial Parliaments. Although so near Dublin, the immediate surroundings of the garden are quite rural, the extension of the city during the last half century having been to the south and opposite direction from that of Glasnevin. The ground occupied comprises thirty-one acres, and is naturally beautifully undulated; the central portion being sixty-five feet above sea level, though only one and a half mile distant from it. This elevation commands an extensive view of the Dublin and Wicklow mountains on the south, and of the agrarian county on the north, east, and west. It is further beautified by the river Tolka forming the boundary on the north, which enables a stream of water to be conveyed through the aquarium, which, consequently, only gets stagnant during dry seasons, when the river is very low. It was formerly the domain of the poet Tickel, Addison's friend, by whom many of the trees still standing were planted. The locality has consequently a sort of classical interest attached to it. The collections of plants in the several departments of stove, greenhouse, herbaceous, alpine, &c., are all extensive; the more recently introduced kinds being well kept up according as they appear in commerce.

The conservatories are also on an extensive scale, two of the ranges being upwards of three hundred lineal feet each, varying in height from fifteen to sixty feet at their centres and wings, besides other ranges of detached pits and small houses. As in other metropolitan botanic gardens, plants which are useful in medicine and the arts receive special attention here, but

PLAN OF THE ROYAL BOTANIC GARDENS AT GLASNEVIN, DUBLIN.



the more showy kinds are not held altogether subordinate to the former, convenience being afforded for both to be well attended to. The principal conservatories are therefore kept well furnished with flowering plants at all periods of the season. Palms, ferns, pitcher plants, and cacti are specialties of which there are good collections, and also a fair collection of orchids. The herbaceous department is one of the most extensive and best arranged to be met with in any botanic garden in Europe at the present time.

This establishment is open to the public daily, from twelve to four o'clock in winter, and from one to five in summer. Being at a considerable distance from the most fashionable side of Dublin, those who have time to visit botanic gardens on week days are small in number compared with the Sunday visitors, who resort in large numbers to the garden. The director, Dr. Moore, in his report for 1871, states, that 54,068 persons visited on week-days, and on Sundays, 169,760. He further states that no material damage was done by them. When we last had the pleasure of seeing these gardens we were much pleased to observe that the comfort of the assistants had not been neglected among the many recent improvements which have taken place. A good two-storied house has been built for them with reading-room and other conveniences.

Paris Gardens.—In the great nursery gardens of Paris we learn there is now an abundant and well-cultivated supply of plants for embellishing the promenades and public squares. The squares are again well kept, and Paris will soon be as beautiful, from a gardening point of view, as it was during the brightest days of the Empire. The same cannot be said of the tree plantations, which, although nearly completed, leave much to be desired.

GARDEN DESTROYERS.

THE WHITETHORN SAWFLY.

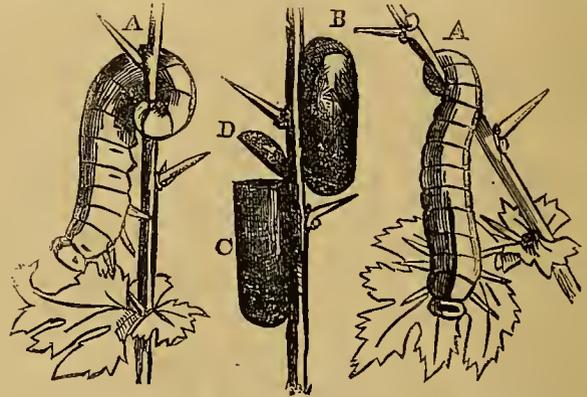
In what is called the merry month of May, the whitethorn sawfly may frequently be seen buzzing about the hedges like a great hairy bee that has lost its way; its flight is so eccentric as to seem altogether purposeless, and it is far more likely to strike you in the face, and then fall plump down in the road or pathway as though desirous of being trodden under foot, than to make any attempt to escape so dangerous an enemy as either man or boy. It is totally ignorant of fear, and has no idea whatever of self-preservation. Yet this strange and seemingly uncouth creature possesses the instinct needful for the continuation of its kind. Its apparently blundering and meaningless flight is often arrested by its legs catching in the twigs of the hawthorn; when this happens its claws serve as grappling-irons, and suddenly bring it to a standstill amongst the newly expanded or just expanding leaves. A "happy thought" now seems to strike the creature, for no sooner is its blundering career interrupted by a hawthorn twig, then in a state of tender youth and succulence, than it commences the apparently agreeable task of sawing a little slit in the rind, and depositing therein a single semi-transparent egg; and, this feat being performed, it proceeds to find another twig, apparently in the same blundering manner, and then another, until it disposes of all its eggs, laying one, and generally only one, on each twig. I am not aware that any precise observations have been made as to the number of days passed in the egg state; my first acquaintance with the caterpillar is when about half-grown; it is then of a pale sickly green colour, but covered with small white flakes, which come off on the hand when touched; this clothing is very singular, and its object, whether for adornment, warmth, or protection, has not been ascertained; the head is white, excepting only the crown and a spot on each cheek, which are black; in the cheek-spot is situated the eye; the body is wrinkled transversely as though divided into a great number of little rings; down the very middle of the back is a darker stripe; the legs and claspers are pale green.

Unlike the majority of sawfly caterpillars, those of the whitethorn seem to feed only by night. On a hawthorn hedge in my neighbourhood, I saw such a multitude of these caterpillars one evening, that it looked as though loaded with white fruit: some were suspended by their tails, and sprawling their legs about in the air; others were feeding vigorously; others again were rolled in a compact ring round a twig of the hawthorn; one and all seemed fully engaged. The following day I went to the same spot in the forenoon, expecting to witness a morning performance; in this I

was doomed to disappointment—not a caterpillar was to be seen, nor could I find one by searching the twigs and leaves with the utmost care. At last I made out to my entire satisfaction that they descended towards the roots every morning, but reascended the stems after sunset and made a night of it. At night I collected a number, with a view to watching their movements and making a more precise description.

On each side of the body is a row of apertures, through which the creature discharges a watery fluid on being annoyed. On these occasions it evinces a strong disposition to throw itself on the ground, always first arranging its body in the ring form; but the attempt to drop is often frustrated by a leaf or twig being included in the ring, and the twig thus decorated with its living burthen is a very curious object. Just below each of the above-mentioned apertures is an oblong spiracle. The head, when the caterpillar is full-grown, is yellow, with a raw-sienna-coloured blotch on the crown.

In July or August the caterpillar ceases his peregrinations up and down the stem, and, having found a place exactly to his mind, constructs of glue a very hard oblong cocoon; this is most firmly attached to a twig, and is of a very dark brown colour—in fact, it so closely resembles a lump of gutta-percha in colour, substance, and texture that imitation cocoons might be made of that substance which would deceive the most experienced entomologist. Having carefully ensconced himself in his new dwelling, the caterpillar rests from his labours, and takes life very easily for the next eight months. All the change that I can observe is a gradual shrinking—a growing smaller by degrees, and beautifully less. In October it is evidently smaller than in August; smaller still, and more shrivelled, in December; and again smaller still in March. Its colour also undergoes some little change; it becomes yellowish, and has a very indistinct



The Hawthorn Sawfly. A A, caterpillars of the natural size; B, a cocoon; C, the same after the perfect insect has escaped by cutting off the top, D.

transparent appearance. The head is yellow, except the crown, which is brown; the legs are huddled up close to the mouth, and the claspers look as though drawn into the body; little is to be seen of them, but there are small cavities in the places they formerly occupied. These changes indicate the greater change—that to a chrysalis—which invariably takes place in March or April, after the creature has spent about forty weeks in the caterpillar state, during thirty-four or thirty-five of which it has been a total abstainer, eating and drinking nothing, and gradually diminishing in bulk.

The chrysalis is of a dingy green colour, but shining, and having brown cases to the wings and body. Every limb, every part of the body, is plainly distinguishable, although it is enveloped in a separate skin or covering; the antennae, eyes, mouth, legs, wings, even the saw of the female, are almost as distinct as in the perfect insect; but all is still as death—there does not appear to be the slightest power of motion. The chrysalis state does not last long—rarely more than twenty or twenty-five days, sometimes not so much as either; and then the colour gradually deepens, until it assumes almost the black-brown tint of the perfect insect which is now about to appear. The final change is a rapid one, and the mode in which the prisoner obtains his release is very singular. The fly is furnished with enormous sickle-shaped, sharp-pointed jaws; and, instead of applying any solvent to the interior walls of the cocoon, as some of the moths certainly do, it uses these formidable weapons to cut off the upper portion of the cocoon, just a little shallow cup-shaped lid, which hangs for a few moments, and then falls and is lost. The cutting of this circular lid is a work of the greatest nicety, and the precision with which it is executed is truly wonderful. The point of one mandible is first seen puncturing the cocoon and protruding beyond it; it is then withdrawn by a semicircular movement, its

sharp edge meeting that of the opposing mandible, which is seldom visible on the outside; the two mandibles continue to open and close with a scissors-like certainty, the outer one being frequently visible, the inner one rarely so, until the circle is completed, and the incision returns, as it were, into itself. The released sawfly then slowly emerges, the antennæ being first projected, and the legs immediately afterwards. The creature comes out with great deliberation, and, crawling up the hawthorn twig, allows its wings to hang down and harden; it should, however, be observed that the wings of this insect are never observed, even on their first emergence, in that soft and crumpled state so noticeable in lepidoptera. The stigmoidal spot on the costal margin of the forewings is, in reality, an articulation or hinge, and at this point the wings are folded so long as the insect remains in the cocoon.

These cocoons, both before and after the emergence of the perfect insect, are very conspicuous objects in our hawthorn hedges, and schoolboys are familiar with their use as whistles; the lid is separated from the cup exactly in the place which leaves the whistle of the most perfect form. The scientific name of the whitethorn sawfly is *Tenthredo cratagi*.—*Edward Newman, in "Field."*

THE YELLOW ROSE-LEAF SAW-FLY.

(*ATHALIA ROSÆ.*)

THE insect represented in the accompanying woodcut is a saw-fly, which in the larval state feeds on the leaves of the rose tree, and at times, besides disfiguring it, injures it by abstracting the nourishment which it would otherwise have derived from the healthy action of the leaves. The perfect insect is a yellow saw-fly, with the whole back of the body (the thorax) and of the head of a deep black colour. The larva has twenty-two feet, is dark green upon the back, lighter on the sides and breast, and has a reddish yellow head.

It appears in May, and is most numerous in June and July; and a second brood appears at the end of September and October. The rosarian will recognise the presence of this insect by finding his rose leaves assuming the aspect of thin ghosts or skeletons of leaves,



The Yellow Rose-leaf Saw-fly.

with the upper surface eaten away, and nothing but the under skin left, transparent as gauze; whenever he finds this he may be pretty sure that the *Athalia rosæ* has been at work.

The female lays her eggs on the mid-rib of the rose leaf, and the larvæ browse on its upper skin and the chlorophyll, without penetrating the skin of the underside. When it is matured, it allows itself to drop from the leaf, makes its way a little into the ground, and there spins a cocoon, out of which the saw-fly escapes in August. The winter generation remains in the shape of shrivelled up larvæ until May in the following year before it is developed. The larvæ are said also to feed on the leaves of *Sedum album*. Hand-picking is the means adopted for getting rid of this insect. A. M.

WATERCRESS GROWING IN FRANCE.

THE systematic cultivation of watercress was unknown in France until 1811, when M. Cardon, an officer of the Grande Armée, established at St. Léonard, near Senlis, cresseries similar to those he had seen at Erfurt, forming a bright green oasis amidst the snows of the winter of 1808-9. In 1835 a report of M. Héricart de Flury called attention to the success which had crowned M. Cardon's efforts, and the Central Society of Horticulture gave encouragement to the further cultivation of this plant by awarding him for his fine cressery of forty beds (covering fifteen acres) their grand medal. From that time watercress-growing made rapid strides, and cresseries were shortly to be seen in all the valleys in the neighbourhood of Paris. In some instances, it is true, the results obtained were unsatisfactory, and much time and trouble were wasted in the attempt to produce cress in situations in which, owing to the insufficient water supply, it could not possibly thrive. In spite, however, of ill-success in certain cases, the cultivation of watercress had, in 1855, assumed such proportions that the number of beds then supplying Paris with their produce had increased to 710; and at the present time there exist, we are told, no fewer than 950, nearly half of which have been laid down, and are worked by M. Billet, at Duvy (Oise), and at Gonesse (Seine et Oise).

The cressery of Duvy, formerly a swampy meadow is situated in the lowest portion of the valley crossed by the road from Paris to Crépy, and advantage has been taken of the river St. Marie and a canal, as well as of several fine springs in the neighbourhood, to secure for the numerous beds into which the "culture" is divided a constant flow of fresh water. The springs alone are said to furnish no less than 12,000 to 13,000 gallons a minute. M. Billet, however, does not rely entirely upon water as a fertilizing agent, but turns to account as manure the droppings of a herd of thirty cows. He finds that in spite of a certain portion of this application being washed away by the current, a sufficient quantity remains to have a marked influence on the crop. The cress, instead of being thin and stalky, develops a luxuriant growth of close-set leaves, and its flavour becomes at the same time less bitter and more piquant. To distribute the manure the workman makes use of a large wooden rake without teeth (so-called *schaële*), forcing it in between the leaves of the green herbage, and by the same movement pressing down the stems which the labourer engaged in the preceding operation, that of cutting, had left erect. To facilitate the cutting, a plank is placed across each bed, and the workman, kneeling on the same, draws a bunch of cress towards him with one hand, and cuts it with the other. Great care is taken not to "crop" the luxuriant head to be operated upon, but simply to "thin" it; and so well is this point attended to, that an unpractised eye fails to distinguish cut from uncut beds.

As fast as the cress is cut and tied—and a skilful labourer will do this work at the rate of 100 bunches an hour—it is thrown into water on the shady side of the bed, and then removed to a reservoir under the kiosk. It is afterwards packed and forwarded to Paris in baskets which hold 100 bunches, and are made in the shape of a cylinder, so as to allow of a free passage of air down the centre. The operations of cutting and manuring succeed that of rolling, and the roller in use is one which, on account of its peculiar construction, M. Billet considers specially adapted for the purpose. When it is desired to lay down fresh beds or renew old ones, the necessary supply of plants is procured by thinning those spots in the cressery where an over-luxuriant growth is observable; and as to weeds, which no amount of vigilance can prevent from occasionally making their appearance, all that is needful to succeed in eradicating them is the exercise of a little patience and attention.

The second cressery of which he is the proprietor—that of Gonesse (Oise et Seine)—presents, as regards character of the soil on which it is established, a remarkable contrast to the one we have just described; for whereas that at Duvy is situated in what was formerly a swampy peat bog, the beds at Gonesse are laid on a firm sandy clay of considerable agricultural value. Although, however, the soil in one of these two localities is greatly inferior to that of the other, the produce per acre is about the same, and it is therefore evident that the successful cultivation of watercress depends far more upon the quality, quantity, and method of distribution of the irrigating water—in the above cases almost identical—than upon the character of the land. No herd is kept at Gonesse, but manure is purchased from cowkeepers in the suburbs of Paris, and applied in the same manner as at Duvy. As to the result of the two undertakings, we are informed that each of them supplies Paris with about 200,000 dozen bunches of watercress per annum—which is equal to an average of 1,000 dozen per bed—and that M. Billet, who is constantly adding to the extent of his watery domain, can command a higher price for his produce by some centimes than is obtainable by any of his competitors in the market.

MARKET GARDENING.

BY H. EVERSHED.

(Continued from Vol. I, p. 632.)

THE courtesy of Messrs. T. & J. Mathews, of East Ham, Essex, and Wandsworth, Surrey, enables me to describe the management of an extensive garden-farm, lying within seven miles of the General Post Office, and occupying a site remarkable for historical memorials, and still more so for certain modern works. The Danes crossed it when they rowed up the Roding to Ilford; the Romans had a burial-place on it; and a few years ago the main sewer of North London was carried through it. These and other intrusions have cut up the farm to some extent, and perhaps it may some day be overwhelmed by works of trade and commerce. Acreage: 620 acres in the parishes of East Ham, Barking, and Little Ilford. There are about 420 acres of gravel loam and 200 acres of alluvial land drained by "sewers," that is, open ditches which are under management and capable of being drained into the Thames at low tide. Situated in the valley of the Thames, within one mile of the river and immediately opposite Woolwich, this farm, like the rest of the garden district, lies on a flat. The nearest rising ground is at Epping, to the north, and Shooter's Hill across the river. Technically, however, the farm is divided into the light land called "upland," which is from 10 to 20 feet above the water level, and rests on a bed of gravel, and the marsh land in Plaistow, and East Ham Levels, which is below the water-level at high tide. Eighteen inches of dry mud forms here a desirable *locus statio* for many kinds of vegetables, though not for corn. Magnificent crops of common and red cabbage, parsnips, and long red mangold, are growing on a surface that is only just out of the water at any period of the year. Water oozes into the furrows, where deep ones are drawn here and there; it fills the intersecting ditches and the main sewers. Water, almost stagnant, and covered at this warm season with a thick green scum of vegetation, bounds and protects the fields; and during the whole period of the growth of the crops it fills the subsoil at less than 24 inches from the surface. But the upper layer of this mud-bed is almost always dry, crumbling after a few hours of sun or wind into a soft, black earth, which may be lifted in handfuls that leave no stain of dirt.

The marsh land was converted from pasture by ploughing 15 years ago, and, after a succession of such crops as I have named, with onions and potatoes, it is still so strong as to require but little manure, which in the case of parsnips might induce causer at the crown, and in the case of onions might possibly bring on an affection called "booting," a term expressing the situation of young onions when they sink away, or, so to speak, "sink down into their boots." Onions are liable to be overcome in this way when sown too frequently in the same field, or on a cold, stiff, unsuitable soil, or in an ungenial situation. The more artificial the treatment the nearer the disease, and the cultivation of onions is certainly artificial when they receive 50 tons of manure per acre; young onions, however, in the condition described, seem to suffer from want of vitality rather than from any specific disease. The size of the fields on the farm, generally large, varies from 60 acres to 4 acres. The elm is the native tree. The situation of the farm is anything but rural; and its surroundings, especially on the river side, are incongruous with agricultural operations, if not forbidding in their aspect. There are in the immediate neighbourhood enormous gasworks, jute factories, docks, an arsenal, a forest of ships' masts, and acres covered with tall chimneys, and, besides the noise of great industries and a large population all around, there is the roar of constant artillery practice at Plumstead Marsh. The average of rent, tithe rent-charge, rates, and taxes is, together, £5. 15s. an acre, rates being about 18s. to 21s. an acre in the several parishes, and tithes 14s. an acre. The number of farm horses averages about 50, varying from 47 to 52. The yearly expenditure in manual labour is nearly £5,000, or about £9 an acre.

The quantity of manure purchased yearly is about 10,000 tons, besides bones to the value of £300. The live stock at the present consists of 25 bullocks, and 220 sheep to eat the aftermath. A large portion of the manure is brought from London by the waggons returning after carrying goods to market. The farm is divided into 540 acres of arable, and 80 acres of grass land. About 160 acres produce two marketable crops yearly, or, if it can be so expressed, 700 acres of crops are grown in each year on the 540 acres. The principal crops, and the customary breadths of each, are the following:—potatoes, 200; onions, carrots, and parsnips, 130; cabbages, 90; corn, principally wheat, and turnip, cabbage, and other seeds, 50; rhubarb, 20; mangold, 20; a variety of small crops and seed-beds, 30. The second crops are collards, following potatoes, cabbages, or onions; potatoes following spring cabbages; mangold transplanted after cabbages up to about 10th July; and savoys and cabbages after any other crop removed in spring.

The rules observed in cropping are to apply heavy dressings to the

gross-feeding crops; to place some others, such as onions, at wide intervals in the rotation; to select the best land for crops like cabbages and savoys, which require strong land; to keep the breadth of potatoes within 200 acres; to use corn, which is not a paying crop, as a rest or change for the land, and mangold as a cleansing crop, *i.e.*, one which induces a healthy growth in the next crop. No regular rotation is adhered to, but the following examples may be taken as an approximation of the system of cropping:—1, potatoes and greens; 2, parsnips or carrots; 3, mangold; 4, onions and cabbages. Or, 1, cabbage and savoys; 2, parsnips or carrots; 3, onions; 4, potatoes. In order to give the reader a general idea of the distribution of the £9. per acre per annum expended on labour, I shall notice the main items connected with each crop.

(1.) POTATOES AND GREENS.—The land is left unploughed till March; it is, however, cultivated deeply in spring for this crop and for most others. As the next year's crop ought not to be manured, the potatoes get an unusually heavy dressing, such as 30 tons of short manure per acre, ploughed in with three horses and a 10-inch furrow in March. The sets are planted in every other furrow, at 18 inches by 15 inches in the row. They are hoed and moulded in the usual way, and marketed in June, July, and August. The potato-gang were lifting a large crop of early potatoes, exceeding 4 tons per acre, on July 7th, at 6s. 8d. per ton, weighed in the field, and the haulm raked neatly into wide rows. In a few days the price would be reduced, and the cost of lifting a heavy crop of 10 tons of late potatoes would be about 4s. per ton. The ground is harrowed at the time of lifting the potatoes, and is immediately ploughed deeply, with three horses, for the collards, which are dunged heavily if they are to be followed by carrots, and are not manured if parsnips are to be the next crop. The plants are set one foot apart, at a cost of 20s. per acre for labour, and 40s. an acre for the plants, supposing one acre of seed-bed to plant 14 acres of collards. This crop is hoed several times. Bunching for market costs 4s. 6d. per 20 dozen bunches. The collards having been removed during the winter, the land is cultivated deeply early in spring and ploughed 14 inches deep with four horses for

(2.) CARROTS OR PARSNIPS.—As the cultivation of the latter is described elsewhere and that of the former does not require minute description, it will be sufficient to add that the Early Horn or James's carrot for bunching is sowed broadcast immediately after the plough. The hoeing and cleaning of this crop costs Messrs. Mathews £1. an acre. Taking up and bunching, which was in full progress last season in the third week in June, costs 8s. per 20 dozen bunches, which is thus divided: the men taking up the roots, 2s. 6d.; the women washing them, 1s. 8d.; men bunching, 3s. 4d.; cost of rods, 6d.

(3.) ONIONS.—The land having been heavily manured for the previous crop, is ploughed deeply with three horses, sown with 5 cwt. per acre of bone-dust mixed with guano, and scarified: 10 or 14 lbs. of seed per acre is sown broadcast at the end of February, or early in March. The cost of hoeing and cleaning the crop is £5 per acre, and bunching a great crop costs 40s.

The spring crop of cabbages, sent to market in April, May, and June, is sown in the last week in July or first week in August, and planted at the end of September or early in October. The summer crop of cabbages is sown in succession, commencing in open weather in spring. The seed must not be sown too early, as the young plants become blind when frost-bitten.

(To be continued.)

Weeds on Walks.—I have a weed-killer which perfectly answers that purpose, at least as far as walks are concerned. It has various names, but that by which it is best known is muriatic acid. It can be supplied from the makers at about five shillings or six shillings per cwt. It completely destroys all vegetable life (insect and animal as well) mixed at the rate of half a pint to the gallon of water. One application of this will keep walks free from weeds, moss, or worm casts for two years. As regards its application, it is only needful to wet the walk with it; in two seconds the weeds and all insects will be killed, and in a few hours after they can be swept off; or, if left, it does not matter much, for in a day or so they become shrivelled up, leaving the walks greatly improved in appearance, owing to the nice gloss it leaves on them. On broad walks, I put it on with a large watering-pot and ordinary sized rose. It is not necessary on hill walks to put it on so heavily that it will run; for of course wherever it touches grass edgings or box it at once kills them. Even in the case of narrow walks, however, if carefully used and run through a smaller rose no harm need be apprehended. As respects conditions, dry weather is better than wet for applying it, as it soaks in before it can be washed to the sides. Properly applied, I can only repeat that it is the finest remedy for weeds on walks I have ever met with.—J. G. TEMPLE.

THE GARDENS OF ENGLAND.

ALTON TOWERS.

THE chief features of this beautiful place are the house, "The Enchanted Valley," and the drive of rare length and beauty that leads to them. The last introduces one to scenery more akin to that found in the highlands of Scotland than anywhere else. It pierces, winds, and insinuates in bends of more than Grecian elegance through miles of hanging woods, approaching sometimes to the boldness and precipitancy of mountain scenery. The carriage-drive is mostly cut out of the side of a hill, and commands every feature of interest along the route. The wood is rich and varied, and abounds in out-cropping masses of rocks, natural ferneries of rare breadth and magnificence, that make our artificial imitations little and poor indeed. Almost every feature of woodland scenery is unfolded as one drives along the carriage-road. Of course, the predominating character is that of a hanging wood of almost interminable extent. But now it widens out or closes in; at times it is comparatively smooth, and again rocks and under-shrubs and ferns jostle each other for the mastery. Anon, we sweep round a curve, and come in sight of a broad lake. Through such scenery, affording the most charming bird's-eye views of the opposite valley, we drive on and on, until at last "The Towers" themselves are seen and reached. It speaks much for the dignity of the mansion to be able to add that it bears the strain of the noble interlude—the grand approach—well. It is a worthy terminus to such a drive. This is a point that is often badly managed—the correlation, if we may so put it, between the length, width, and general importance of the carriage-drive and the house.

Alton Towers, as is well known, is a magnificent example of Gothic architecture, and bears the impress of the master-mind of Pugin. More need not be said, but that the chapel, mansion, and all its surroundings constitute a grand whole of rare purity, massiveness, and grandeur. A fine conservatory is attached to the house; and there are flowers and gardens in the different courts and on the terraced platform. Most of the plant houses are also placed near the house, and contain an extensive collection of stove and greenhouse plants and orchids. But the style of gardening around the house, immediately we leave the courts, is hardly in keeping with its grandeur, and is capable of great improvement. The site of the strawberry grounds, for instance, and the entire space between these and the mansion, should be converted into a geometrical or Gothic flower garden to harmonise with "The Towers." Let us now hasten from the glories of Gothic architecture to the lighter and more fascinating charms of "The Enchanted Valley."

This is a splendid medley of waving wood and rolling surface—of falling waters of dark cedars and green glades—of archi-

ture and artistic gardening—of gilded temples, Swiss cottages, panelled walls decorated at the basement with floral mosaics, light and shadow—a rich commingling of nature and art, with the former everywhere predominating.

To appreciate the scene as it is, it is needful to look back, and grasp the idea of what it was meant to be. The past history of this valley, as of most things, pours a flood of light on its present condition. Time was when art, high and dry, reigned supreme here. Everything was faultily faultless, splendidly regular, evenly trim. The rod, the line, the shears, the knife, bore rule for years after the valley was planted and furnished, and the effect, we are told, was at that time admirable.

(To be continued.)

D.

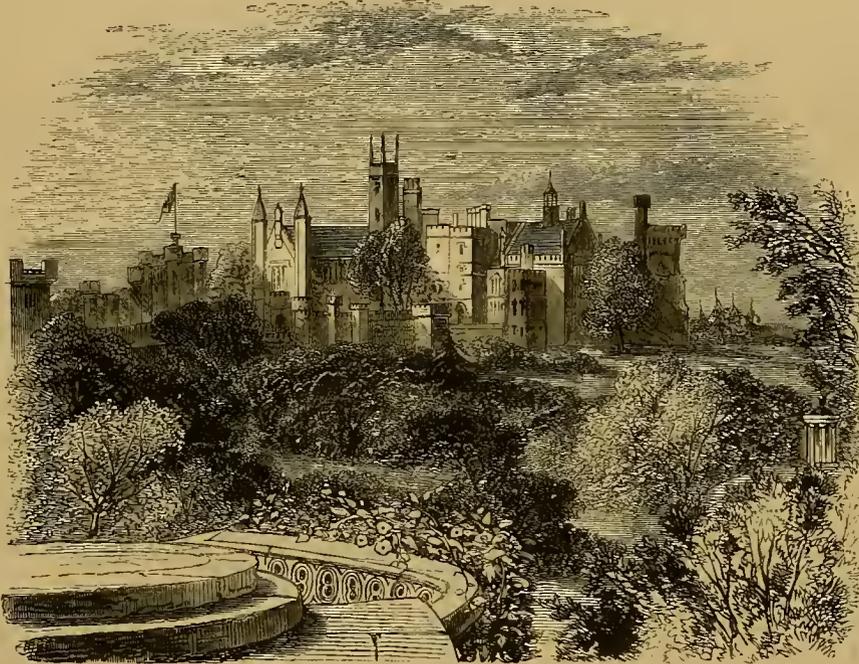
THE RELATIVE INFLUENCE OF PARENTAGE IN FLOWERING PLANTS.

READ BY DR. DENNY, AT THE BIRMINGHAM CONGRESS.

FROM early youth I have taken much interest in artificial fertilization, but kept no registered account of my crosses, or their results, until the controversy arose respecting the tri-colored Pelargoniums, as to whether their leaf markings could be re-produced by fertilization and seed, or whether they were sports only, and owing to a diseased condition of the plant. To ascertain for my own satisfaction the correct theory upon these points, as well as with the object of obtaining, if possible, some information regarding the relative powers the respective parents exert over their progeny, I commenced a series of experiments upon the scarlet section of the Pelargonium, employing varieties of the most opposite and varied character, and crossing them in every conceivable way. I conducted these experiments too with the utmost possible care and minuteness of detail, both as regards the methods I adopted for preventing self or insect

fertilization, for insuring the fertilization being effected by the desired pollen only, and as regards the keeping an exact register of every cross, as well as record of their results. By this means I soon arrived at a satisfactory conclusion as regards the points at issue respecting the transmission of variegation of the foliage by fertilization, from the fact of its being manifested, to a greater or less degree, in as large a proportion as from fifty to sixty per cent. of the offspring, where the green zonal had been fertilized by the pollen of the variegated; I also obtained some valuable information indicative of the powers the respective parents exert upon various other points in connection with the transmission and modification of the foliage and habit of the plant, as well as of the colour and form of the flower.

From the information thus derived, I am of opinion that, by careful and persistent fertilization, under the guidance of the observation of results, it is possible to produce almost any modification in the character and habit of our plants, and variety of colour and form in our flowers, we may desire; for I am satisfied that by these means we possess a much greater power of moulding our flowers in accordance with preconceived design than is generally supposed; and, moreover, I think it possible that ultimately some insight might be obtained into the working of the laws that govern procreation in the vegetable kingdom, and that produce variation in our fruits and flowers. The result of my experience, derived from these experiments, as regards the relative influence of the parents, certainly tends in the reverse direction to my previous ideas, which were derived from books, from which I gleaned that the form of the flower, and constitution and habit of the plant, were inherited from its mother;



Alton Towers.

whilst the colour of the flower only was supposed to be conveyed by the father. The recorded results of my crossings indicate an immense preponderance of influence over the progeny on the part of the father in all respects—in colour and in form, in the quality, in size and substance of the flower, as well as in the production of variegation of the foliage, and in the habit and constitution of the plant also, provided the plants employed are of equal strength.

I wish to be distinct upon this point of relative strength of the parents, because it seems to me that upon the equality, or the preponderance, of strength on either side, very much hinges, as regards the results we obtain from our crossings; for power of constitution exerts most unmistakable influence, and where it preponderates on the part of the seed parent, it will modify the otherwise prepotent influence of the pollen parent; this modifying influence manifests itself most as regards the habit and foliage of the plant, and next as regards the form and substance of the flower; and, lastly, as regards the production of a blend in the colour of the flower. To instance what I mean (I am alluding to the *Pelargonium*), if the pollen of a flower of brilliant and decided colour, but of bad form and substance, belonging to a plant of weakly constitution, be applied to the stigma of a finely formed, thick-petalled flower, of a plant possessing a vigorous constitution, some few of the progeny will be influenced towards improvement in the form and substance of the flowers and habit of the plant, with perhaps some blend in the colour; showing that the preponderance of vigour in the seed parent had exerted a certain amount of influence; but even under these circumstances much the greater proportion of the progeny would resemble the father in all respects, or show reversion, either towards former progenitors, or towards an original type.

I will quote a case or two in point from my note-book. During the summer of 1869 I raised about one hundred and forty seedlings from crossings between Lord Derby and Leonidas; in about half of these Lord Derby was the pollen and Leonidas the seed parent, and half resulted from crosses effected the reverse way. The flower of Lord Derby possessed fine qualities, both as regards form of petal and smoothness of texture, but was wanting in depth and brilliancy of colour, and in substance also, and the plant was deficient in vigour of constitution as compared with Leonidas. The flower of Leonidas was much inferior as regards form and quality, but of greater substance and brilliancy of colour, as well as larger, than Lord Derby, and the plant possessed a vigorous constitution.

These seedlings flowered during the spring and summer of 1870. Of that portion in which Lord Derby was used as pollen and Leonidas as seed parent (the seed parent, observe, being the most vigorous), about one-third resembled in all respects their father; a few produced flowers very considerably in advance of Lord Derby, in size, in substance, and in colour of the flower, and with a superior constitution and habit of plant, showing the mother's influence in combination with that of the father. (I would instance Sir Charles Napier as an example and which resulted from this cross.) Of the remaining two-thirds, a few very nearly resembled in flower Leonidas, except being paler in colour, and having a somewhat increased breadth of petal, resulting from the father's influence (for instance Iago), but a large proportion were inferior, showing reversion towards an ancestral type. Of that portion in which Leonidas was used as pollen and Lord Derby as seed parent, nearly half resembled in all respects their father, and the rest were much inferior; not one showed that any appreciable amount of influence had been exerted by the mother towards improvement. It will be observed that in this cross the pollen parent possessed both the inferior flower, and the most powerful constitution also. As regards the habit of these seedlings, they were all more robust than their mother. The same season I raised about sixty seedlings from a cross between Celestial and Lord Derby. Celestial, which was used as pollen parent, possessed a brilliant magenta-coloured flower, but of very bad form and substance, and possessed a weakly constitution; from this batch of seedlings a few produced flowers of a colour very similar to their father (but somewhat less brilliant), and with a great improvement as regards the form, quality, size, and substance of the flower, accompanied too with a fair habit and constitution of plant, showing a marked influence on the part of the mother, which in this cross, was decidedly the stronger of the two parents. (Lanthe resulted from this cross.) The remainder of this batch were mostly of very bad form and quality of flower, and weakly constitutions, but there were some very brilliant and novel colours, interesting examples of colour blending; amongst them were carmine, rose crimson, pinks, and vivid scarlets; some in all respects resembled Celestial.

My large seedling nosegay Wellington was the result of a cross between Le Grand nosegay and Leonidas; Le Grand being used as pollen parent. Here the plants were about equally vigorous. Wellington resembles in the character of its flower its father, but has an increased breadth of petal derived from its mother; the colour of the flower is nearly that of the father's also, but it is somewhat a blend, the purple hue of Le Grand and the deep scarlet of Leonidas, having produced a very dark crimson scarlet, almost maroon. The foliage, too, of Wellington is most distinctly of the nosegay type; the habit being still more vigorous than that of either parent.

In breeding for "variegates," and using the variegates (which as a rule are wanting in vigour) as pollen parents and the robust green zonals as seed parents, about half the number of their progeny showed variegation and possessed weakly constitutions, the remainder being green zonals; upon the order of procedure being reversed, by which the pollen parent became the parent of very much the greater vigour, the mother's influence was almost nil. I believe that in plants with long-established properties it is owing to the existence of a difference in the vigour of the parents that the produc-

tion of novelties and varieties in our flowers (and probably in our fruit too) mainly depends, and that were it not for a preponderance of power on the mother's side, the progeny would almost invariably resemble the father; and hence the immutability of our flowers and vegetables, which are annually re-produced from seed, the result of self-fertilization. But I consider that another source of the production of novelties and variation exists in the tendency in all flowers (and fruits) that have been artificially bred up to a state far in advance of their original condition, to revert towards former progenitors (especially under the influence of self-fertilization), by which means new combinations of ancestral properties are formed, and hence new varieties.

Even under artificial fertilization I find in the *Pelargonium* this tendency to reversion to exert very considerable modifying influences; especially have I observed it as regards the colour of the flower; for instance, the magenta shades that have been produced upon the scarlet *Pelargonium*, have resulted from the crossing of pinks upon scarlets; and very many of my seedlings, the offspring resulting from the crossing of two magenta-coloured flowers, have produced pink ones as well as scarlets, showing reversion to both the colours of their immediate ancestors. It is a point worthy of observation, whether the colour of a flower, or a change in the character of a plant that has been recently obtained, is conveyed to the offspring in the same proportion as to numbers, and with the same certainty as those of long standing? I think not. I must also mention a remarkable instance of reversion as regards foliage that has occurred in two of a number of seedlings raised this spring from Violet Hill nosegay as seed parent, crossed by Lanthe, with the object of obtaining variety in the flower; two of this batch of seedlings have come variegates; now Violet Hill was bred for variegation, and was planted out at Messrs. Henderson's establishment at St. John's Wood in the spring of 1864, with a view to its breaking into variegation, but which it did not do, but was selected and subsequently sent out for its flower, and on account of its dwarf habit of growth.

A close analogy seems to me to exist between the vegetable and animal kingdoms as regards the ill effects produced by breeding in and in, and the good resulting from crossing opposites; for I find it to be necessary for the maintenance of improvement in the flower and the constitution of my seedlings, to introduce fresh varieties to breed from annually; and I find that crossing two flowers of the finest qualities does not produce such satisfactory results as where one of much inferior quality is employed; of course, it will be inferred from my previous observations that I use the superior quality flower as pollen parent.

As regards the condition of the atmosphere that favours the effecting of difficult crosses, my experience indicates that bright, clear weather, and the hours of sunshine are conducive to fecundation.

I have alluded to the antipathies and affinities we find to exist without any explicable cause; for instance, I have found it impossible to fertilise three or four varieties of the scarlet *Pelargonium* (viz., the Duke of Cornwall, Dr. Muret, Beauty de Surrennes, and all that section of the doubles which sprang from Beauty de Surrennes), which to all appearance are mere varieties of the zonal section, save with one another; and showing the existence of affinity between what are supposed to be distinct species. I have fertilised without much difficulty a variety (*Peltatum elegans*) of the ivy-leaved section by the pollen of the zonal.

I have also alluded to the possible difference in the respective influence of the parents in true hybridization. Upon this point I have not sufficient evidence to form a fair opinion; but certainly in the seedlings I have raised between the ivy-leaved and zonal sections, their foliage (with the exception of some distinctive evidence of their being hybrids) resembles almost entirely that of their mother, which, you will observe, is the reverse of my experience of the results produced between varieties.

Much has been written and said upon the difference in the quality and powers of the pollen of the short stamens; and if the supposed difference really does exist, it is a matter of considerable practical importance, and one worthy of further scientific investigation; but my experiments have hitherto failed to satisfy me of their possessing any difference.

In an admirable article on hybridization by Mr. Isaac Anderson-Henry (see Vol. I., p. 480), he says, "That owing to the granules of the short stamens being smaller than those of the long ones, they can the more easily descend the tubules leading from the stigma to the ovaries, and consequently facilitate the crossing of a large-flowered variety or species upon a smaller one." I have not been able to detect this difference in size, although I have many times placed the granules of the long and short stamens side by side under a powerful microscope; nor, I believe, is it the opinion of physiologists of the present day, that they do descend these tubules at all; in fact, it has been shown that they send down filaments through them to the ovules. The arrangement of the anthers upon filaments of different lengths looks to me like a provision to insure all parts of the body and legs of insects coming into contact with the pollen as they pass down the flower to obtain the nectar, thereby rendering the fertilization of the next flower they visit the more certain.

Lastly, I would remark, that to enable reliable conclusions to be drawn upon any of these points, we require an accumulation of data derived from the careful observation of very many unbiased workers, whose results have been obtained from experiments conducted with scientific precision, upon all our flowers and fruits. Such an accumulation of recorded facts (if they could be obtained), would prove a source of the greatest interest to the philosopher, by their tendency to throw some light upon the working of nature's laws, and could not but afford most valuable information for the guidance of the practical horticulturist; and moreover by freeing horticulture from all empiricism would place it in its true and legitimate position among the modern sciences.

THE ARBORETUM.

THE FUNERAL CYPRESS.

(CUPRESSUS FUNEBRIS.)

THERE are three Asiatic Cypresses, namely, *funnebris*, *corneyana*, and *torulosa*, all of which have a pendulous habit when old, and bear considerable resemblance to each other. In the countries where they grow they are known by the name of weeping cypress. The Funeral Cypress is a native of the north of China, and, when full-grown, forms a tree sixty feet high, with forked branches and a spreading head, thickly furnished with a slender, pendulous spray; while young it is rather compact, and somewhat erect, but in proportion as it increases in size and age, it becomes graceful and drooping. The leaves on young plants are distant, linear, and glaucous, and very different from the old trees, which are oval, and closely imbricated in four rows. This cypress is quite hardy; it was first introduced into this country in 1849, by Mr. Fortune, to whom we are indebted for so many fine plants, both from China and Japan.

Like all cypresses, it is well worthy of a place in every collection of graceful evergreen trees. As yet, few examples of it in this country are above twenty feet high, but these sufficiently prove that the older it gets the more graceful it looks. It somewhat resembles, except in colour, old trees of *Cupressus tornulosa*. With the Chinese it is a great favourite for planting about tombs in burial grounds.

HARDY TREES AND SHRUBS.

BY GEORGE GORDON, A.L.S.

THE JERUSALEM SAGE
(*PHILOMIS FRUTICOSA*).

THIS forms a dense evergreen bush, from two to four feet high, with a greyish aspect. It grows naturally on mountains and other dry exposed places in Spain, Sicily, Greece, and the Levant. It was first introduced into England in 1596. It is a plant which thrives well in any common garden soil, and is easily increased either by means of layers or cuttings of the half-ripened wood. When planted on the upper part of rock-work, and fully exposed to the sun, it makes a fine display in June and July, when furnished, as it usually is at that season, with numerous whorls of yellow flowers.

Its leaves are opposite, ovate, or oblong, roundly wedge-shaped at the base, wrinkled, villose, and green above, but

clothed densely beneath with white down; they are also either entire, or more or less crenated on the edges, and measure from two to three inches in length. The branches are somewhat spreading, and densely coated with little tufts of yellowish tomentum. The flowers, which are of a dusky yellow colour, are produced at the top of the branches in solitary or twin whorls, each containing from twenty to thirty flowers, which are bilabiate or two lipped, the upper one being helmet-shaped, and the lower one spreading and trifid. The bracts, or floral envelopes, are broad, ovate or ovate-lanceolate, acute, or villose, greenish in colour, and fringed on the edges with longish hairs. The calyx is large, tubular, and villose, with five blunt teeth, which end in a spreading, awl-shaped, stiff point.



Funeral Cypress. (After Fortune.)

AMERICAN INK OR WINTER BERRY (*PRINOS GLABER*).

THIS forms a pretty ovate-shaped evergreen shrub, three or four feet high, densely clothed with dark glossy leaves; and in the autumn, when covered with its black berries, it makes a fine display. It thrives best in a mixture of sandy peat and loam; but many who have grown it find it to succeed very well with them in any good garden soil that is not stiff or heavy; it can be readily increased either by means of seeds or cuttings.

The winter berry is a native of North America, from Canada to Florida, where it grows in shady woods. It was first introduced in 1759. The leaves are an inch and a half long, alternate, leathery in texture, lanceolate, tapering much towards the footstalk, dark glossy green above, pale beneath, and smooth on both surfaces, with two or three visible serratures near the apex. The shoots when young are rather downy, but quite smooth when fully matured. The flowers are small, white, and mostly produced in threes, on solitary axillary footstalks, in July and August. The berries are jet black and ripe in September, and in consequence of their

colour, are called ink berries. "Prinos" is the Greek name for the holly.

Yew Trees.—The following particulars of a yew tree, in the churchyard at Doveridge, Derbyshire, may prove of interest to your correspondent at Long-leat. Height, 36 feet; circumference of branches, 212 feet; spread of branches from north to south, 63 feet 4 inches; from east to west, 72 feet; girth of stem at the ground, 23 feet 6 inches; girth of stem at seven feet from ground, 24 feet; smallest girth of stem, 20 feet; length of stem 7 feet. This yew tree is quite hollow all the way up, and about one-third of the stem completely gone, which will account for the girth of the stem appearing small. It is perfectly healthy, and has grown in the circumference of its branches in the last thirty years from 167 feet to 212 feet.—*T. Povey, Doveridge, in "Field."*

GARDENING FOR JULY.

THE INDOOR GARDEN.

BY T. BAINES, SOUTHGATE.

Conservatory.—Every means should now be employed to prolong the blooming of such plants as are at present in flower, as well as to encourage such as are progressing, for conservatory decoration. Owing to the greater number of these structures being usually much loftier than ordinary houses for plant growing, a much greater surface is exposed to the action of the sun; consequently the atmosphere is much drier, so much so, indeed, during the long summer days, as to make short work of the greater number of blooming plants available at this season. The borders that usually exist for climbers should be kept as moist as is consistent with the well-being of the plants growing in them; the moisture given off from them will, in some measure, counteract the dryness of the atmosphere, and on all available occasions, especially early in the mornings and in the evenings, water should be applied under the stages, where such exist, and on the tables, yet not so plentifully as to occasion the unsightly inconvenience of wet paths to walk upon. Moisture applied in this way has not only the effect of benefiting the blooming plants, but tends to keep down red-spider, which generally has a particularly genial feeding ground on conservatory climbers. The latter should have forcible applications of water from the syringe, or, still better, from the garden-engine, occasionally. Thin shading material (in all cases movable) should be used not only for the roof, but for the sides of the house next the sun, if the house is lofty. Assist by all necessary attention *Fuchsias*, *Liliums*, *Amarantus*, *Balsams*, *Pelargoniums*, *Vallotas*, *Cassia corymbosa* (yellow), *Witsenia corymbosa* (blue), two plants of easy culture, but not nearly so often met with as they deserve. *Achimenes*, *Gesnera Cooperi* and *Doncklaari*, *Tydeas*, and *Gloxinias* should be properly and carefully hardened by giving them plenty of light, and placing them near where air is admitted in the stove before their introduction to the conservatory, where they should be placed in such a position as to be as far removed from draughts as possible; by such means such plants may be made to do duty there for a considerable time; and it is necessary to employ plants of this description during the next two months, when there is a greater scarcity of blooming plants for conservatory decoration than at any other time during the year. Attend well to all autumn and winter blooming plants. The first batch of *Cinerarias* should, by the middle of the month, be ready to be placed in their blooming pots; six-inch ones will be large enough, if the plants have been well managed all through the several stages of their growth. The first batch of *Hydrangeas* should now be potted, using pure peat and sand for a portion, and loam and sand for the rest of the stock; by this means, in all probability, both the blue and pink colours will be secured.

Stoves.—Old stocks of *Poinsettias* should now be shaken out, repotted, and encouraged to make strong sturdy growth. Another useful winter blooming plant is *Begonia dipetala*. If small plants of this are now at hand, and grown on freely, they will furnish quantities of bloom in the winter. *Allamandas*, *Clerodendron splendens*, and *Dipladenias*, showing flower freely, should now be trained round their trellises, but not too closely, as that gives them too stiff an appearance, and also has a tendency to cause premature decay in the leaves, which, if allowed to overlap each other, turn yellow and decay; this has also a tendency to weaken the plants and reduce their blooming capabilities. Expose them to all the light possible, using just sufficient shading material to break the direct rays of the sun; by this means the flowers will be produced much stouter, and will stand in a cut state, if required, much longer than when treated more tenderly. Autumn-struck cuttings of hardwooded stove plants, such as *Ixoras*, *Allamandas*, *Gardenias*, &c., which have been potted during the winter, will by this time require a further shift. The aim of the cultivator ought to be to get the plants up to the required size as quickly as possible; if such things are allowed to become stunted through being pot-bound, it takes a long time afterwards to get them to move; in fact, it is better to commence with a cutting than to grow a plant on that has been allowed to get into such a condition. It would seem that the increased demand for cut flowers at the present day is illimitable; it therefore behoves gardeners to make provision to meet it. In most establishments, large or small, there will be some things held in greater esteem than others. Therefore it is impossible to name any plants in particular that would be held in general estimation. Yet during this and the next two months flowers from stove plants will be largely used for mixing with *Roses* and other outdoor productions. There is a great charm in variety; yet the old system of growing collections of plants where the object was to include the greatest number possible, both of species and varieties, is anything

but calculated to meet the requirements of the present day; it is much better to confine to a reasonable extent the number of varieties of plants grown to such as are the most attractive, last the longest, and are held in the greatest estimation. If there is one plant more than another that is more generally useful as a decorative stove or intermediate house plant, and capable of producing quantities of cut flowers for eight or ten months in the year, it is *Ixora coccinea*. Now is a good time to either strike cuttings or procure plants of it; and if kept clean from insects, and grown under the same conditions as to temperature and atmospheric moisture, summer and winter, that will suit *Cucumbers*, it will amply repay for the trouble bestowed upon it. Its flowers will stand in water for a week, and it can be cut with impunity without injuring the plants.

Fern House.—Attend well to the general stock in the way of water, especially such as have filled their pots with roots; any inattention to this matter results in the destruction of that healthy green appearance of the foliage which is the first characteristic of well-grown plants. Do not maintain a higher temperature than is necessary for healthy development; such being inimical to persistency of foliage, or to its endurance if required for cutting. Keep down insects by repeated light fumigations, in preference to performing that operation seldom and severely.

Azaleas.—These should be making active growth, which should be encouraged by syringings overhead every afternoon, shutting up early, and keeping the plants thoroughly free from their two great enemies, thrips and red-spider. Plants that require repotting if their roots are active, should be shifted at once, using nothing but good peat, and sufficient sand to keep the soil sweet. Hardwooded plants that have been potted some time, and that are growing freely, should now be no longer shaded in bright weather, but, on the contrary, should be fully exposed to the sun, throwing water liberally about under the stages amongst the pots, so as to counteract drying influences. Young stock that was potted early, and that is growing vigorously, may be benefited by a further shift.

Orchids.—Encourage these by all means to mature their growth whilst there is length of days. Use discrimination in the application of water. The thick-rooted East Indian section, and more especially such varieties as inhabit the hill regions of India, require an amount of moisture at the root that would soon be fatal to *Cattleyas*, *Lælias*, and plants of similar description that are especially impatient of too much water at the root. See well to the varieties that are most suitable for furnishing winter flowers. *Cypripedium insigne*, *Cælogyne cristata*, *Zygopetalum*, *Calanthe vestita* and *Veitchii*, these if well managed will afford a succession of flowers for four months, and the length of time they will endure in wet sand or water would surprise those who have not tried them in that way. *Odontoglossum Alexandræ* is coming into general request as one of the most elegant of flowers; in some places it is now being grown by the hundred, and may be had in flower nearly all the year round. It and its congeners require only a comparatively low temperature, with plenty of moisture in the atmosphere and at the roots, with careful shading.

Heaths.—Some growers repot such as require it about this time, when the plants have done flowering; but it is much better to defer the operation until the autumn, when the weather gets cooler. Pick off all seed-pods, if seed is not wanted, as soon as the flowers are decayed, as the production of seed greatly exhausts the energies of plants.

THE FLOWER GARDEN FOR JULY.

BY GEORGE WESTLAND, WITLEY COURT.

Now that "bedding out" has been brought to a close, in order to render the flower garden thoroughly enjoyable, the greatest possible care must be exercised to insure perfect order and neatness. Owing to the terrific hailstorms which we experienced on the 7th and 8th ultimo, and the long continuation of wet, frequent stirrings of the soil, so as to thoroughly loosen the surface, will be necessary; this will greatly expedite the growth of the plants, and save much useless labour in watering. Mulching is a safe practice; more particularly in the case of heavy soils that are liable to crack; for this purpose use some light material such as cocoa-nut fibre, spent tan, or leaf-mould. When watering is absolutely necessary let it be done thoroughly; the best time for performing the operation is in the evening, as then the plants have a chance of getting thoroughly refreshed by it. In bright sunny weather, with dry, hot nights, foliage plants will be benefited by being sprinkled overhead late in the evenings. The surface soil in flower baskets and vases should also be mulched with moss, kept in its place by means of small pegs; this will have a tendency to prevent evaporation, and will save labour in watering.

Unremitting attention must now be directed to the keeping of

climbers within proper limits. Proceed with the pegging down and training of growing plants in beds; also with the staking of herbaceous plants in mixed borders. These should not be huddled together, but should be carefully tied out so as to have perfect freedom in the way of natural development. Dahlias and Hollyhocks should have their fastenings frequently examined, and the shoots tied up, thinning out such as are superfluous. Where Calceolarias are much exposed to wind, a few short twiggy branches placed neatly among them before they are fully grown, so as to become covered by the foliage, will fortify them against very severe blasts; for the support of annuals these branches are also excellent, if used sufficiently early. The thinning of these should have attention as soon as they are fit to handle. Annuals, biennials, and perennials may still be sown, and such as were sown early transplanted into nursery beds. Remove decaying blossoms and seed-vessels from Rhododendrons and plants in general; for upon attention to this will greatly depend the vigour of the plants.

Bulbs should be taken up as soon as they are well ripened, which is easily determined by the decay of the foliage; do not, however, remove the leaves at the time of lifting, except, perhaps, such as part freely from the bulb; allow them to dry gradually off in an airy shady situation, protected from rain. Anemones and Ranunculuses be careful to take up as soon as their leaves wither, for they are apt to emit fresh roots when left in the ground. After they are ripe, be particular that the bulbs are thoroughly dry before they are stored away. A great many roots are annually destroyed by being stored away in close drawers, &c., when in a half-ripened state.

Propagate Carnations and Picotees from layers as soon as the shoots are in a sufficiently advanced state. Clip all kinds of hedges, and prune back evergreens so as to keep them within proper limits. Continue to sweep and roll lawns, keep the grass neatly mown, and the edges of the walks trim and precise.

A great majority of evergreen shrubs may now be propagated either by layering, or by means of cuttings made of half-ripened shoots. Amongst these may be mentioned Hollies, which will now root freely from half-ripe cuttings of this season's growth. Choose a situation shaded from the sun, under a north wall, or under the shade of trees, and insert the cuttings in fine sandy soil, under a frame; water freely, and slightly tilt the lights; and beyond frequent sprinklings they will give no further trouble.

Pits and Frames.—Many things may now be propagated in these. Pinks, Mule Pinks, Pansies, and all kinds of herbaceous plants, if inserted in frames or under hand-lights in a shady place, will root freely. Sow seed of Cinerarias, prick off seedlings, and propagate choice sorts from cuttings. Sow Calceolaria seed; cover it lightly with sand, and place a square of glass over the pans, on which lay some wet moss until the seeds vegetate, when they must be gradually inured to light. To Chrysanthemums afford liberal treatment; layer young shoots of them in small pits, where they are wanted in a dwarf state. Increase Pelargoniums by means of cuttings. Cut down such as are well ripened, keeping them dry until they cease bleeding, and then sprinkle them frequently overhead to assist them in breaking. Sow Primulas for late flowering, and pot on such as were raised early.

THE FRUIT GARDEN FOR JULY.

BY WILLIAM TILLERY, WELBECK.

Outdoor Fruits.—The frost in May now shows its effects in this locality by a total failure of some of our hardy fruits, such as Apples, Pears, and Plums. Small bush fruits, such as Gooseberries, Currants, and Raspberries show but partial crops; but Strawberries, although their earliest opened blossoms were injured, are a very good crop. Cherries, such as Morellos and Kentish, on the north walls, and Eltons, Waterloo, and some of the American varieties on east and west aspects, are also well cropped. To keep up the character of the extraordinary season we are now experiencing, a terrific thunder-storm passed over us on June 18th, with a heavy hail-shower and rain. The storm seems to have been general in the midland counties and north of England; and the damage done to vegetation and the breakage of glass in hothouses by the heavy hailstones is very great in some districts. Wall fruit trees will require careful attention in trying to keep the legions of aphid and grubs in check, for I have never before seen these pests so numerous as they are at present. It is not only the loss of the crops of fruit we have to deplore this year, but likewise the foliage of the trees is now so much injured by insects, that it will affect the crops of fruit next year. On the care and attention, therefore, now paid to keeping insects down and the thinning and regulating the young wood so as to get it well ripened

will depend the success of the crop next year. In addition to hand-picking the grubs, the engine must be used freely on wall trees to try to clear them from filth. The shoots of Peaches and Nectarines should be kept nailed in as they advance, for high winds will do great damage to the young cross-growing trees. If the American blight puts in an appearance on Apple trees, a little soft soap or oil must be rubbed on the parts affected, and if this is done in time, it will effectually stop it from spreading. Thin out the canes of Raspberries where too numerous, and secure them against wind breaking them down. As early in the month as possible, and when runners can be got, the first lot of Strawberries should be laid in pots for early forcing. Perhaps Keens' seedling, if from selected plants, is as good a variety for the earliest as can be grown. President, Sir J. Paxton, and Ingram's Prince of Wales are likewise excellent varieties for succession; and Empress Engenie, Sir C. Napier, Lucas, Dr. Hogg, and British Queen for the latest crops.

Vineries.—When the grapes are all cut in the earliest houses every attention should be paid to getting the wood ripened thoroughly, and trying to get the vines into a state of rest by taking the lights off when it can be done, or exposing them to the air as much as possible. Give abundance of air night and day, and gentle fire-heat in dull weather to grapes in late vineries. All Grapes intended to be kept late in bottles of water should be well thinned, and, if possible, got thoroughly coloured and ripened by the end of September. This system of keeping Grapes in bottles is now a great fact; for many gardeners tried it last year, and have given in their adhesion to its utility. Some gardeners now say that they have tried the system nearly twenty years; but it is singular they should have let their light be hidden under a bushel so long, to the great loss of the gardening community. We have all tried to stick bunches of late Grapes in Turnips, Potatoes, and even Mangold-wurtzel to keep them for a few days or weeks, but it was not until Mr. Robinson's account appeared as to how they did these things on a large scale in France that we got on the right track. The cause of rust on Grapes has lately been discussed in THE GARDEN, and the ventilation of the subject may lead to something tangible in showing how to prevent this great disfigurement to Grapes. Sulphur has been said by some to be the great cause of the rust on Grapes; but I have never found this to be the case. To get rid of the mildew last year in a late vinery, I sulphured a portion of the vines where the mildew commenced, and the young berries were just in the stage when rusting was to be expected; but when the sulphur was syringed off, no ill effect on the berries was seen. If the sulphur was vapourized by the hot sun in summer, or by too much heat on the flues or pipes, it would doubtless affect the skin of the young Grapes if they hung near its influence. I believe the great cause of rust to be draughts of cold air sweeping over the bunches when the berries are young, rough handling in thinning the bunches, and rubbing the hair of the head on them—all of which ought to be avoided.

Peach Houses.—Where the fruit is all cleared in the early houses, give the trees a good syringing to clear the filth off the leaves collected when the fruit was ripening. In houses where the lights can be taken off, it is a good practice to expose the trees to the air, as they will make firmer wood and buds under its influence for next year's forcing. In the late houses syringing the trees and sprinkling the paths once or twice a day will all help to keep up a moist atmosphere and to keep down red spider and aphid.

Figs.—The stopping and thinning of the shoots on the trees bearing the second crop must now be attended to. Keep a moist atmosphere by frequent syringings of the trees and sprinkling the paths with water to keep down red spider.

Melons.—Still maintain a steady bottom heat by linings to dung frames, or by hot-water pipes in houses or pits. Mulch the surface of the beds with well-fermented horse droppings, the same as for a mushroom bed, and keep this well watered till the fruit begins to ripen. Melons when swelling their fruit require plenty of water at their roots, not dribblets on the surface, but a good soaking to reach the bottom roots. Sow seed now for the autumn supply of fruit, and if the plants are to be grown in pits heated with hot-water pipes, the supply of late fruit will be more certain than when grown in frames.

Cucumbers.—This will now be a good time for setting and marking the fruit of any good sort that it is desirable to keep for seed. I generally grow my plants in large pots to seed from, and after carefully impregnating the fruit leave only from three to four on a plant. By this mode I find success is more certain in getting plenty of seed true to the sort, than by trusting to fruit from plants exhausted by cropping. An excellent sort of new cucumber has been sent to me by Mr. Harrison, of Leicester, to prove for him; I have found it to be a first-class variety in size and shape, and very good in its other properties.

THE PINERY FOR JULY.

BY JAMES BARNES.

For the next four months no difficulty need be experienced in producing excellent pine-apples. The fruits will show quickly and strongly from fine healthy plants; their swelling will be greatly assisted by applications of tepid clear manure water to the roots and occasional syringings with clear soot water, together with a kindly atmospheric humidity well charged with ammonia, and a free but judicious circulation of air on all favourable occasions. Succession plants, in order to form strong healthy shoots, should be shifted on in due time, and placed farther apart in the bed; maintain a strong humid atmospheric heat, and a steady kindly bottom temperature. Syringe freely, and supply air abundantly night and day.

THE KITCHEN GARDEN FOR JULY.

BY JAMES BARNES.

ASPARAGUS BEDS keep thoroughly clear of weeds; dredge with salt moderately and often in dark and rainy weather. Of French Beans and Scarlet Runners make another sowing or two this month. Broccoli, Borecole, and Kales in variety continue to plant out as ground becomes vacant. Sow Coleworts for succession the first and third weeks of this month; as other crops are removed plant them out thickly on well-manured ground till November, in order to have abundance of sweet, crisp little heads till spring-crops come in. It is an essential matter in garden culture to have no empty space at any time through want of perseverance and forethought. Make two more good sowings of Cauliflower this month; and of this useful vegetable plant out in abundance, in order to obtain a supply of good-sized heads through the autumn and winter months. Of Celery plant out a full crop on well-prepared ground; attend well to surface-stirring, clearing away suckers, applying good soakings of manure-water to growing crops, and to methodically earthing them up as they advance in growth. During the month make two sowings of Endive and Lettuces, and plant out such as are big enough to handle. Of Radishes, Cress, Mustard, and Onions, make little but frequent sowings in light, rich soil, and on northern aspects. Where a daily supply of young crisp Turnips is required, full crops of the little quick-growing kinds may be made as Potato ground becomes empty. Onions, Parsnips, Carrots, and other root crops keep thoroughly clean, and maintain a loose open surface about them. Make a good sowing of the early Horn and Dutch Carrots twice this month on a rich light border, in order to have abundance of nice young roots throughout the winter and early spring. Continue to make plantations of Leeks, by transplanting from the seed-bed as the ground gets cleared of other crops.

Plants of Seakale that have been timely thinned will now have formed strong crowns; the flower spikes as they appear should be removed, leaving only a few of the strongest for seed. Of Peas make the two last sowings this month, choosing an early variety, and Veitch's Perfection, which is a splendid Pea, for the last crop. Prepare the ground for them by making trenches, into which dig some good rotten manure. By sowing them in these trenches their roots are more easily supplied with water, which should be given liberally should dry weather set in, for nothing is more productive of mildew than drought. Keep the whole surface of the ground between and about all growing crops well hoed and scarified, never allowing a weed a chance to appear, nor a slug peace anywhere.

NOTES OF THE WEEK.

— A FINE clump of *Brodiaea grandiflora*, a beautiful and uncommon bulbous plant, is now in flower at the Fulham Nurseries. It is a plant without which no collection can be considered complete.

— THE rare *Aquilegia californica*, perhaps the finest of all the scarlet-flowered Columbines, is now in flower at Kew. It grows there about two and a half feet high, and is very attractive. Visitors to these gardens who wish to see this fine herbaceous perennial, will find it in a bed devoted to Columbines, in the herbaceous department.

— Two of the finest hardy bulbs we have seen for a long time are now in flower in Mr. Parker's nursery at Tooting, viz., *Triteleia laxa* and *T. Murrayana*. The flowers of these are much superior to those of the spring flowering *T. uniflora*, which conveys no idea of the beauty of the sorts just named. Both are nearly equal in point of effectiveness to the African lily (*Agapanthus umbellatus*). The flowers of *T. laxa* are of a fine deep purplish blue, while those of *T. Murrayana* are of a pale purplish blue, but are produced in larger umbels. We likewise noticed *T. laxa* at Kew, and also in the nursery of Messrs. E. G. Henderson & Son.

— PRINCE ARTHUR has taken Bagshot Park, Surrey, and preparations have been commenced to render the mansion and grounds suitable as a residence for him.

— ISOLATED heads of the white Lily may now be seen peeping from among the masses of Rhododendrons in Hyde Park. This is a step in the right direction; both Lilies and Rhododendrons are greatly the better of the association. All Lilies thrive well and look well treated thus.

— IN the gardens at Heckfield Place, Winchfield, there is a beautiful specimen of *Chamaerops Fortunei*, about eight feet high, now splendidly in flower. This fine plant was transferred to the open ground in the autumn of 1867, where it has remained ever since quite unprotected, and is flourishing admirably.

— WE are happy to announce that Mr. Badger, the courteous and able honorary secretary of the Birmingham local committee, who worked so strenuously and so successfully to make the late great show a success, has been elected a Forty-Guinea Life Member of the Royal Horticultural Society. It is a small tribute greatly merited.

— A VERY charming new species of Navel Wort (*Omphalodes Luciliae*) is flowering freely in the Exotic Nursery, Tooting. The plant stood out in the open ground during the past winter, commenced to flower early in May, and has continued blooming more or less throughout the past two months. The flowers are sky-blue, with a whitish eye, changing to pink when fading.

— THE little mud-wall edgings now look exceedingly ugly in the parks. We presume they are made with a view to presenting the small succulent and other plants more effectually to the eye than they would be if placed on a level or gently-rounded bed. But this they do not do, and, being in themselves hateful and ridiculous at all times, it is to be hoped they may soon disappear.

— *EPILOBium OBCORDATUM*, a beautiful new free-flowering dwarf species of Willow-herb from the Rocky Mountains, is now in bloom on a border at the Wellington Road Nurseries, St. John's Wood. It grows about three inches high, and has flowers of a fine deep magenta or rosy crimson colour. It is one of the very finest of alpine plants.

— WE are glad to learn that the Earl of Stamford and Warrington has, with his usual liberality, thrown open his magnificent gardens and grounds to the public on Mondays, as well as Tuesdays and Fridays. Omnibuses run between Stourbridge and Enville on these days at very reasonable fares, thus affording greater facilities to the public of visiting Enville.

— THE hardy white flowered *Crinum* (*Crinum capense albiflorum*) is blooming freely this year in the Botanic Gardens, Regent's Park. This fine bulbous plant, once thought tender, is worthy of a place in all collections of hardy bulbs, the plants in Regent's Park having withstood the test of many severe winters in one of the worst clay soils with which we are acquainted.

— MR. ALEXANDER IRVINE is preparing a new work on the British plants, which he calls the "Pocket Flora of the British Islands." It is to be a condensed summary of the characters of the orders, genera, and species of our national Flora, with some illustrations, and a copious account of the localities of the rare species, and a glossarial index.

— THE Temple Gardens are now open to the public, and that boon thus granted by the Benchers is appreciated, is manifest from the numbers that flock thither every evening. The temporary closing last year consequent on the alterations necessitated in connection with the Thames Embankment, has resulted in the enlargement and other improvements of the gardens.

— MANY beds in Hyde Park are as yet (July 4th) empty and brown. We may, perhaps, expect the beds to be filled within a week or two, but the plants can scarcely make a foot of growth before they will be in danger of a visit from the earliest frosts, and if, as sometimes happens, in August, a frost should hurt our tender plants, we may at last begin to see the necessity of paying greater attention to the subjects suited to our own climate, and which do not necessitate a wintry aspect in our gardens during the bloom of summer.

— THE Royal Horticultural Society's Show at Birmingham, was brought to a conclusion on Saturday last. The day was fine, and the attendance of visitors very large. The admissions by cash payments alone were, 23,410. The amount taken at the gates during the five days was £2,476. 17s. 10d., and it is estimated that about £2,500 was realised by the sale of tickets, including the amount of £1,038 subscribed for special prizes. Something like £6,000 has been raised in Birmingham and its neighbourhood in connection with the visit of the Society. The profit is to be equally divided between the Society and Mr. Quilter, the proprietor of the Lower Grounds, Aston. Mr. Quilter has generously offered to give half his share to the charities of Birmingham.

GARDENERS' ROYAL BENEVOLENT INSTITUTION. THE ANNIVERSARY DINNER.

ON Tuesday evening last took place the most successful and pleasant anniversary which this institution has ever experienced. After the usual speeches had been made and responded to, the chairman, the Rev. S. Reynolds Hole, spoke as follows:—

Thus far, he said, we have resembled the lovers in that poem, which charms all hearts, and specially those which love a garden—the lovers in our Laureate's "Gardener's Daughter," when,—

"They spoke of other things, they coursed about
The subject most at heart, more near and near,
Like doves about a dovecot wheeling round
The central wish, until they settled there."

We come now to the main object of our meeting, and to the toast of the night. Gentlemen, there is a story told that a distinguished foreigner was brought upon a certain occasion to the anniversary dinner of the Gardeners' Royal Benevolent Institution, and that when it was delicately intimated to him by his friend that if he were disposed to increase the funds of the society a propitious opportunity had come, he did not seem to appreciate the privilege. If, he replied, as he looked around him, these are your gardeners, so healthful, so cheerful—if this is their mode of living, if thus they fare with sweet music in their ears, and their beautiful wives and sisters smiling in the distance—pardon me, *mon amie*, if I reserve my gold for objects which appear to me more afflicted and helpless than these. It was explained to him, I need hardly say, that the gentlemen present were not aged nor infirm gardeners, and that the ladies were not widows and orphans; and those true claims which this institution has upon the sympathies and support of benevolent men, were, I have no doubt, laid before him, as now, earnestly and urgently, I would ask leave to press them upon you. Ladies and gentlemen, there is no class of men which conduces so much to the happiness and enjoyment of their employers as the gardeners.

"The stately home of England,
How beautiful they stand!
Amid their tall ancestral trees,
Through all this pleasant land."

To whom, humanly speaking, do they owe so much of that beauty? To the landscape gardener! And what is now their chief grace and glory?—their gardens. What would they be—Chatsworth, Belvoir, Trentham, Hardwicke—without them? And our great merchant princes, where, when they leave the "dusky lane and wrangling mart" of commerce—where is the rest and refreshment of their lives, but in a garden? Again, is there a fête, a rejoicing, a procession, a ceremony—religious or secular—a christening, a wedding, a church to be adorned for a festival—go to the gardener for flowers. Just regard the daily gratifications which a rich man has from his garden. What is at this season, as he comes to his breakfast-table in his London house, hardly rested from last night's debate or last night's hall—what is most refreshing at his morning meal, to eye and palate too—the peach, the grape, the strawberry, sent up from his country home! It is the same at his luncheon—the succulent vegetable, the crisp salad; and at his banquet how far more beautiful than his massive plate, the pictures on his walls, the silks and satins of his guests, are the glowing fragrant flowers, the graceful ferns! and, again, the luscious fruits, which have been sent to him by his gardener. And yet again, when the dinner is over and the dance begins, more flowers for my lady's hair, for my lord's coat, for mademoiselle's bouquet; for staircase and supper-table too. I suppose that answer will be made, the man is paid for it. I speak from a long and large acquaintance with facts when I say that, with some exceptions, the gardener is not adequately paid; for these causes: 1, his vocation requires superior mental ability, as well as manual skill; 2, it involves an expenditure in the purchase of plants, and in the hospitable reception of visitors, which he cannot avoid, if he is a true gardener; and, 3, it is an occupation perilous to health. This last plea sounds the strangest, but it is by far the strongest, and the proof is but too plainly painfully manifest. At first sight you would be inclined to suppose that of all employments horticulture must be most healthful. But it is not so. In the first place, the gardener is up early and late, out in all vicissitudes of weather, and therefore peculiarly liable to that scourge of our climate, rheumatism, which cripples so many of our agricultural and outdoor workers. In the second place, a far greater risk is incurred by him again and again in the cultivation of flowers and fruits in high artificial heat. Those strawberries and grapes required the warmth of summer when snow was lying on the ground; those orchids and stove plants must have their thermometer at seventy degrees when outside there are ten degrees—twenty degrees of frost, and the gardener has to pass from one to the other, with the perspiration standing on his brow. I need hardly say that in the obituaries of our gardening publications many names are recorded, as in the case of her Majesty's gardener at Windsor, of men who perish in

the prime of life. Nevertheless, you say, though the gardener, as a rule, may be underpaid, he might reserve something to provide against these great contingencies. And this must be our opinion generally, or we should not be here to night in support of an institution of which the very aim and object is to induce gardeners to anticipate the time of need. We must all feel a surprise that—if by paying five pence a week, or one shilling and eightpence for each of the twelve months in the year, a gardener can receive sixteen pounds when he is incapacitated from work—so few comparatively subscribe to the funds. The questions are—Why do they not subscribe? How can we induce them to do so? A principal reason, I believe, which prevents gardeners from joining the institution is found in the fact that its resources do not at present insure the immediate relief of all claimants; and you would hardly expect a soldier to subscribe to a fund for the succour of the wounded, unless he knew that an ambulance and a doctor would be ready to help him when he fell. The remedy is patent: to augment the funds of our institution, so as to admit more candidates at once, and to induce more gardeners to join the institution. Masters should inform gardeners of the benefits to be derived, and do something more than tell them to save. Save, how easy to say; how hard to do! I think of my first and last money-box; how I tried to shake out the pennies not long after insertion, how I extracted them eventually with the blade of my penknife and sold my box to a friend. The way for masters really to help gardeners would be, either to pay the subscription of one guinea as partly their remuneration, or to offer to deduct it from their wages. Ladies and gentlemen, I have but few more words to say on behalf of an institution which has already relieved nearly 200 infirm and needy gardeners, and which is at this moment supporting 60 pensioners, at an expense of £850 per annum. There lives, hardly a stone's cast from my garden gate, a good, old, faithful gardener, who did his duty for forty years to my father and to me; when his strength failed, and he left my service, he had saved nothing; for his characteristic love of plants had always absorbed the little cash he had to spare. It was not in my power to support him, his wife, and daughter, or to do more than find him a home, a garden, and some small further help. What was he to do? Why to ask me to write to Mr. Cutler, of 14, Tavistock Row, to remind him that he, Evan Hirst, had subscribed for more than twenty years to the Gardeners' Royal Benevolent Institution, and to claim the pension of £16 per annum, which he has ever since enjoyed. Every day of my life I see a proof of the good done by this institution, more gratifying than words can tell. Just this more, and I cease. I said something about saving. There is only one way to save. No money which you ever spent is safe, but the dole which you gave in charity. Be generous, as in your own time of need you would have comfort. "Give, and it shall be given," for the promise cannot fail, "Blessed is he that considereth the poor and needy; the Lord shall deliver him in the time of trouble."

We have only room left to say that upwards of five hundred guineas were subscribed, and that the meeting was well attended.

SOCIETIES, EXHIBITIONS, &c.

THE BIRMINGHAM ROSE SHOW.

BY THE REV. S. REYNOLDS HOLE.

"Our old friend Horace," as many a man designates the poet whom he cordially hated in his youth, and knows only now in those fine old trusted quotations, of which the world in general, and the House of Commons in particular, seems to be never weary—Horace tells us that the man who first entrusted himself in a frail bark upon the ocean must have had a heart of oak and a bosom of brass; and most of us, remembering the time, when, with a mighty effort of self-command, we left the banks of our family duck-pond in tremor of spirit and in a wobbling tub, can verify all that he says. And all who embark upon a new enterprise must possess this bravery, if ever they hope to make a prosperous voyage, and to reach the shore in safety—he, especially, the young and ambitious amateur, who is about to launch upon the Red Sea of Roses, and to seek the haven of success and honour. He must be prepared, like the mariner, for storm and sickness. Like the boy in the brewing-tub, he must never lose courage, or he will assuredly upset his vessel, and find himself sticking in the mud.

He, who proposes to grow and show the rose in its beauty must prepare himself for many difficulties and many disappointments, and must never flatter himself that because he has a good soil, a good situation, healthful rose trees, and plenty of

manure (all indispensable elements of rose culture), that he has entered upon safe and tranquil seas. Frosts in the winter, and, far more fatal, frosts in the spring, caterpillar, aphid, mildew, fungus, rain-storms, hail-storms, wind-storms, and thunder-storms, must be in his prevision always, and, so far as watchful care can aid, in his prevention too. Thus, and only thus, doing his best, and not daunted because, doing his best, at first he fails, he shall advance, I promise him, from an "extra prize" to a fourth, from a fourth to a third, from a third to a second, and from secondary to primal honours.

Consider the adversities which have so recently met the rosarian in the cruel frosts of May and in the drenching deluges of June, and then regard the glorious display of roses at Birmingham in proof of what I have said; and let nurserymen remember that it is not because Messrs. Cant, and Turner, and Paul, and Veitch, have better soil, but because they have the spirit of perseverance, vigilance, and love, that they have triumphed; and let amateurs be assured that Messrs. Evans, Laxton, and Perry have no mysterious secrets—only a more patient and a more earnest devotion to the rose. Again and again these heroes, victorious now, have endured disappointment and defeat; but, like true knights and wise generals, they have only learned from the failure of to-day how they may best insure to-morrow's victory.

The best roses in the exhibition were shown by Mr. Cant, of St. John's Street, Colchester, and by Mr. Turner, of the Royal Nursery, Slough, the former winning the first prize for seventy-two varieties, and the latter the first for forty-eight, and also the first for twenty-four. Very grand roses they were, both as to brilliancy of colour and as to fulness and symmetry of form; and the amateur will do well to read carefully the names of the successful flowers, and to order those which he does not possess. Mr. Cant also achieved the first prize for twelve blooms of the same rose, with a wonderful collection of "Dupuy Jamain," the most striking flower in the show as to colour, which so glowed with a violet and carmine splendour, that it almost seemed to be surrounded with a halo. His rivals gleamed with all their rich crimson tints, but he eclipsed them all save one, the Duke of Edinburgh, which, grown by the same exhibitor, took the premier prize as the best single rose in the show. Mr. Cant was also victorious with his beautiful blooms of Countess of Oxford, in "the best new rose sent out by English nurserymen in the spring of 1870 or 1871."

In addition to the high honours previously referred to, Mr. Turner, of Slough, also won the first prize for "twelve trusses of white or blush roses, all of one variety," with a dozen lovely specimens of the Baroness Rothschild.

Mr. George Paul, of the firm of Paul & Sons, the Old Nurseries, Cheshunt, was not in his usual "form"; but after winning some seventy prizes in 1871, and the principal premiums for pot roses in the spring of 1872, his temporary halt on the road to victory need cause him small discomfort, and indeed he is one of the few successful heroes of horticulture who bear defeat with perfect complacency. Not that he won no glory in this great war of the roses. To be second in the great race of all, first for new roses, and first for roses in pots (the latter one of the most charming features of the show), was enough to transport the ordinary rosarian into a wild delirium of joy; but great marshals may not be satisfied with the brilliant charge of a regiment, nor even with the success of a brigade; and that which is a banquet for the dolphin is but a breakfast for the whale.

I was glad to see that Messrs. Veitch & Sons, who gave me brotherly help in establishing the first national rose show, had made great progress in the quality of their cut roses. They evidently aspire to that pre-eminence in roses which they hold in the introduction of new and beautiful plants; and if they make as much improvement in the next two years as they have made in the two which are past, the high-mettled racers who run for Queen Rosa's Plates must keep themselves in condition, for they will certainly want all their speed.

Two of our chief rosarians were not competing. Mr. Cranston, of Hereford, brought some boxes of cut blooms for the ornamentation of the show, the bulk of his plants not being in flower, and Mr. Keynes, of Salisbury, has still his triumphs in prospect.

The amateurs were not quite in their usual force; but Mr. Laxton, of Stamford, Mr. Perry, of Castle Bromwich, and chiefly Mr. Evans, of Arbury, exhibited some excellent roses. I was pleased to notice that, though my dear old companion, the Rev. Patrick Smythe, of Solihull, is "lost a-while" to us, his successor is doing ample justice to the rose trees, which he loved so well.

Some of my friends who did not attend the show, may desire the names of those roses which seemed to be the best. There were among the older varieties:—Alfred Colomb, Baroness Rothschild, Beauty of

Waltham, Centifolia Rosea, Charles Lefebvre, Devoniensis, Duke of Edinburgh, François Louvat, General Jacqueminot, Henri Ledechaux, John Hopper, Madame Boll, Madame Caillat, Madame C. Joigneaux, Marguerite de St. Amand, Marie Beauman, Maurice Bernardin, Madame Villermoz, Maréchal Niel, Monsieur Noman, Monsieur Bonnefines, Madame Therese Levet, Marechal Vaillant, Madame Bravy, Nardy Frères, Pierre Notting, Senatenr Vaisse, Victor Verdier, and Xavier Olibo; and among these of more recent introduction, Countess of Oxford, Dupuy Jamain, La France, Louis Van Houtte, Mille. Eugénie Verdier, Marquise de Castellane, and Paul Neron.

Of the roses sent out in May last, the following appear to me to be the most promising:—Baronne Louise Uxkull, Etienne Levet, Jeanne Gros, Lyonnais, Madame George Schwartz, President Thiers, and Richard Wallace. I also admire Mr. George Paul's "Annie Laxton," which was raised by that clever and enthusiastic florist, Mr. Laxton, of Stamford, and which has received a first-class certificate. In vain I endeavoured, as one of the judges and as a member of the floral committee, to obtain a similar distinction for a beautiful new English rose, raised by Mr. Curtis, of the Devon Nursery, Torquay, from a "sporting shoot" of Abel Grand, and called by him "Bessie Johnson," but I was opposed and frustrated by a member of the council of the Royal Horticultural Society, who, having first informed me that he had the power of recommending the rose for a certificate, refused, on seeing it, to do so, for reasons which he did not assign. Mr. Curtis may console himself with the conviction that the public will endorse my estimate of his rose (I heard a nurseryman, Mr. Standish, of Ascot, order a dozen of plants as soon as he saw it; and I know that many other rosarians admire it greatly); but it is a great injustice to grant certificates, as the Royal Horticultural Society has frequently done, to roses raised in France, and not belonging exclusively to the purchaser, who has sent them for inspection, and then to refuse encouragement to a *bona fide* English flower, of symmetrical form, of excellent habit, of a colour which we most desiderate, namely, a pale blush, and of a fragrance hardly surpassed by any rose in cultivation.

ROYAL HORTICULTURAL SOCIETY'S ROSE SHOW. (JULY 3RD.)

SELDOM have we seen the Queen of Flowers shown better than on this occasion. Nurserymen and amateurs keenly contested, and both exhibited blooms of sterling merit. The freshness of the flowers was quite captivating, and when shown in threes, accompanied by a few leaves, they were highly effective. There was only one collection in pots, and that was furnished by Messrs. Paul & Son, the excellence of whose flowers, notwithstanding the lateness of the season, was something remarkable. In the nurserymen's class of seventy-two cut blooms distinct kinds, equal first prizes were awarded to Messrs. Paul & Son, and to Mr. Cant, of Colchester. Other classes were equally well represented. In the amateurs' collection, some showed their blooms to better advantage than others by raising them a little above the moss; thus situated they look much better than when laid flat on the surface. Amongst the best roses brought forward at this show may be mentioned Alfred Colomb, Senatenr Vaise, Queen Victoria, Xavier Olibo, a fine dark velvety red, Duke of Edinburgh, Louis Van Houtte, a fine dark kind, Maréchal Vaillant, Baroness Rothschild, Baron Rothschild, a beautiful flower, Prince Camille de Rohan, and Alfred de Rougement, an exceedingly fine dark coloured velvety sort. In single trusses in bud, Messrs. Veitch & Sons came off first with some pretty examples of Homer, which, from its peculiarly delicate colour, appeared quite striking amongst its associates, Madame Falcot, Mons. Furtado, Souvenir de Elise, Devoniensis, and Niphetos. Prizes were offered for good sweet-scented Roses (exclusive of Teas and Noisettes), but they did not bring forward the competition one might have expected. First in this class was Mr. Keynes with a stand of six blooms of La France. The same exhibitor also took another first prize for the best sweet-scented Tea or Noisette Rose with Devoniensis.

New Roses were not plentiful. Messrs. Paul & Son furnished Annie Laxton, a beautiful pink; W. Wilson Saunders, a fine double dark coloured kind; Princess Christina, a good closely bloomed pink variety; and Reynolds Hole, a dark, velvety, double flower, certainly one of the finest, if not the very finest Rose in the show.

First-class certificates were awarded to *Lilium Humboldtii*, a beautiful deep orange-coloured kind with very distinct small spots regularly distributed over the petals, which are a good deal reflexed; to *L. Martagon dalmaticum*, a small flowered dark brown or rather bluish-purple kind, quite distinct from anything which we have hitherto had; both of these came from G. F. Wilson, Esq. Similar awards were also made to *Macrozamia corallipes*, and to *Echeveria scapophylla*, a hybrid between *agavoides* and *linguaefolia*, from Mr. W. Bull; to Rose Annie Laxton, from Messrs. Paul & Son; to *Verbena Lady of Lorne*, white shaded with purple, and producing fine large trusses, from Messrs. W. H. Staacy & Son; to pyramidal Stock Mauve Beauty, from Mr. R. Dean, of Ealing, a fine double kind; and to the following *Pelargoniums*, viz., Empress and Gem of Tricolors, both tricolor kinds from Mr. C. Kimberley, Stoke, near Coventry; Argus, an ivy-leaved kind, from Mr. G. Smith, Hornsey Road; and to a beautiful tricolor, named Mrs. Laing. Several miscellaneous subjects were also shown.



"This is an art

Which does mend nature : change it rather : but
THE ART ITSELF IS NATURE."—*Shakespeare.*

THE HORTICULTURAL "CONGRESS" AT
BIRMINGHAM.

CIRCUMSTANCES have till this year prevented me from attending any of the provincial congresses of the Royal Horticultural Society, and I regret to say I have been anything but edified by the one that has just taken place. A roomy tent is occupied at one end by a few dozen persons of the gardening fraternity, the rest of the space being filled more or less by visitors to the show driven in by passing showers. At hand there is a great noise, which to those not very acute of hearing seems to be the distant sound of the cheers of inebriated men; but it is explained by the immediate proximity of the poultry show. The chairman, Lord Bradford, is absent; and, after some delay, Mr. Moore begins his paper on "Recent Progress in Practical Horticulture." This, curiously enough, had nothing to do with what deserves the name of "progress" in horticulture, but was a mere list of our latest plant introductions and most meritorious seedlings. The list, like all Mr. Moore's work, showed his wide and exact knowledge of the various types of garden vegetation; but was, after all, simply the sort of thing published towards the end of the year by our gardening contemporaries. To this we have, perhaps, no right to object; but on an occasion of this kind, when there is so much to SEE, and when most of us have to go home before we have half completed our survey, it is scarcely considerate to induce us, by "taking titles," to listen to such a well-known *résumé*. Several reporters attended the "congress," and awaited the beginning of operations with the usual attentive attitude which these gentlemen assume; but after a few minutes they laid down their pencils, soon to disappear altogether. Mr. Wm. Paul read a sensible paper on tree form, and several other papers were read, for the discussion of which there was no time to spare.

On the first day Professor Dyer read a paper on some points in connection with the scientific side of horticulture, and on the second Mr. Moore read his paper above alluded to.

The accuracy of the division of the subjects into "scientific" and "practical" may be judged from the lists of papers, which were as follows:—

THE FIRST, OR "SCIENTIFIC," DAY.

The Botany of the Neighbourhood of Birmingham.

On the Relative Influence of Parentage in Flowering Plants.

On some Thermometers for Horticultural use.

On *Dracæna* and *Cordyline*.

On Sulphozone.

On the use of Glass and other Protective Materials in Horticulture.

On Canker in Fruit Trees.

There is, of course, no more distinction in the nature of these subjects than among apples from the same orchard. No notice whatever was given of what papers were to be read, and no one was prepared to discuss them. As we presume those who read the papers did not intend them for the special information of the few dozen persons who attended the meeting, it would be very desirable to make provision to place such papers at once at the disposal of all who care to print them. As it is, one of our contemporaries only is aware of what papers are to be read. It is to be hoped that this one-sidedness merely requires to be pointed out to be remedied.

At the end of Mr. Peach's paper on bedding out, the Rev.

THE SECOND, OR "PRACTICAL," DAY.

On Form in the Tree Scenery of our Gardens, Parks, and Pleasure Grounds.

Hints on the Formation and Arrangement of Shrubberies.

On the Bedding-out System.

On *Stapelias*, their Culture and Peculiarities.

The Future of our Fruit Crops.

On Alpine Plants.

The Cottage Garden.

Reynolds Hole asked permission to say a few words, and was informed that he might do so "for three minutes." Mr. Hole began by remarking that however agreeable the mixture of poultry and gardening information might be in a journal with which most of his hearers were well acquainted, he did not think the immediate neighbourhood of such a vast collection of cocks and hens exactly the right place for a horticultural congress. He then indignantly protested against the erroneous division of the subjects of the "congress" into "scientific and practical" so called, and very justly stated that if any such arbitrary divisions were necessary, the gardeners—those who produced the display—those who worked heart and soul in the art, for the encouragement of which the Royal Horticultural Society was founded, and by which it lives—were entitled to the precedence.

Remedies for the state of things above pointed out at once suggest themselves. A subject of great importance should be selected for sole discussion at each annual meeting, and one or two able papers should be read upon it by competent persons. These papers should not be mere incoherent scraps, nor need they be long to weariness. A free discussion might follow. The subject should, of course, be made known long beforehand. Then all interested would be prepared, and if the theme were well selected, and had a prospect of being discussed in a proper manner, it is probable that numbers would be attracted to the exhibition, mainly by the congress. The whole might of the horticultural mind would be brought to bear on the subject for months beforehand, and we might look for some really fresh and stimulating views or facts; at least we should be certain of a very pleasant meeting.

Then, again, the congress should be held in the evening, and in some suitable building in the town near where the exhibition takes place. These shows are so large, that for those who can spare one day or those who can spare six, all our time is required for seeing the many beautiful and novel objects brought forward. Therefore many can ill spare a few hours in the day time, who could easily attend an evening *réunion*. Lastly, the subject should not only be purely horticultural, but of the highest horticultural importance. The aim and object of the Society should never be forgotten.

We do not hear of builders, or engineers, or architects, or artists, assembling to listen to essays quite foreign to their respective arts or sciences. Perhaps the intrusion of such subjects at our gardening meetings accounts for the absence of the class the meetings were intended to enlighten.

It would certainly be better to give up these congresses altogether, or make a bold effort to put life in them. These remarks are not intended merely as applicable to the present congress, or to the management of it by the learned gentleman, the professor of botany of the Society. He, there is reason to believe, greatly desires the improvement of the congress, which, as everybody knows, has been a *fiasco* from the beginning, before his connection with it. To go on as at present, will not merely be a loss to horticulture, but a disgrace to it.

H. N.

The Parcel Post and the Transit of Plants and Cuttings—

The advantages and economy of the facilities now offered by the post-office for sending parcels safely and cheaply by post can hardly be over-estimated by amateur gardeners and others fond of flowers, but hitherto prevented from indulging their tastes except in the most meagre way, because of the expense and trouble of procuring flowering plants. To those who reside at a distance from florists and nurserymen, and in the country generally, and who are therefore prevented from making personal visits of inspection and carrying off their purchases with them, the parcel post is the greater boon. They are now saved the anxiety and vexation caused by delays and their consequences, and receive their parcels with all the certainty and despatch which reflect so much credit on our postal system and its administration. Many nurserymen and florists in different parts are giving their customers and the public the full benefit of this facility, by preparing and packing plants and cuttings to be sent by parcel post. This fact is not yet so widely known as it should be, especially in rural parts, and we are only doing our duty in drawing the attention of our readers to it. We can assure them that the method is both safe and economical, a saving being effected not alone on the carriage, but also on the prices of the plants.

NOTES OF THE WEEK.

— WE learn that Mr. James Backhouse, of York, the indefatigable observer of our British alpine plants, has discovered *Cystopteris alpina* in the north of England.

— THE flowers which the orange trees in the gardens of the Tuileries and Luxembourg will bear this year, are now being sold in Paris by public auction.

— THAT fine shrub *Fremontia californica*, is now forming seed-pods in the Coombe Wood Nursery; it has been flowering abundantly for the past eight weeks.

— A COLLECTION of Italian cottons, in the raw condition, has been formed by the Chevalier Jervis, Curator of the Industrial Museum, Turin, and sent to the cotton department of the International Exhibition, with a map showing the districts in Italy where the cotton is under cultivation.

— *DICENTRA CHRYSANTHA* is one of the finest herbaceous plants we have had for a long time. It is now covered with its golden yellow flowers, which contrast beautifully with the glaucous green foliage. The plant is about four feet high, and as much through, and is a mass of bloom from bottom to top.

— AN attempt is being made to acclimatise in Europe the New Grenada *Coriaria thymifolia*, or ink plant. The sap which flows from this plant is called *chanchi*; it is reddish at first, but afterwards becomes intensely black. This ink can be used without any preparation, and does not injure steel pens as much as ordinary ink, while, at the same time, it is more enduring.

— THE night-blooming *Cereus* (*C. grandiflorus*) has been lately flowering in great perfection in Mr. Ceely's conservatory, at St. Mary's, where on some nights it opened as many as twenty flowers. As most of our readers doubtless know, the flowers of this and some other nearly-allied species of *Cactas* only come forth at night, and their existence is limited to one night; on the following morning they close up, and are seen no more.

— Two handsome species of Flax, introduced by Messrs. Backhouse, of York, about two years ago, are now flowering in the neighbourhood of London. They are *Linum salsoloides* and *L. viscosum*. The first has narrow heath-like leaves and white flowers with a purplish eye and is growing on the rockwork at Kew; *L. viscosum* may be seen at the Hale Farm Nurseries, Tottenham; it has downy leaves and pale purplish rose-coloured flowers, which are produced in great abundance.

— WE have just received from the Rev. Harper Creve one of the most beautiful flowers we have ever seen. It is a large pure white single rose, supposed to be of Russian origin. At first sight it seemed like a very large flower of the *Gam Cistus*. It has a delicious and somewhat peculiar scent. We hope that the presence of so many fine double roses in our garden will not be considered a reason for not growing this and some others of the fine single kinds. The plant flowered in Mr. Crewe's garden at Drayton-Beauchamp, and is of course quite hardy.

— SEVERAL gentlemen of New York city have projected the establishment of a botanical garden in Madison Avenue, where there is to be erected a substantial and ornate glass and iron structure for the reception and exhibition of plants from all parts of the world. It is proposed to make this not only a perpetual plant exposition, and hence a place of public resort, but to establish in connection therewith a school of botany.

— LILIES are now in all their glory of bloom in our gardens. The much-admired *Lilium auratum* is flowering as freely in the open air, in beds of peaty or other light soil, as the common orange Lily of our cottage gardens, though the severe season we have had has been unusually hard upon them. In Mr. Wilson's garden, at Weybridge Heath, where there is such a fine collection of Lilies thoroughly well-grown, long and vigorous shoots of *Lilium speciosum* and its varieties, are now shooting forth here and there from a bank of *Rhododendrons*, and by and bye will be very beautiful seen in that position.

— THE Liverpool Improvement Committee have recommended that the rockwork required at the road crossing the valley at Sefton Park should be executed at 25s. per cubic yard, the amount not to exceed £75. Confirmation of this recommendation having been moved, Lieut.-Colonel Steble said that although the amount was small, he should like to know that this was the last of the recommendations as to the ornamentation of the park. Alderman Weightman said the first estimate of Messrs. André and Hornblower for the work was £1,500; this was reduced by the sub-committee to £800, and if the present recommendation was agreed to, the amount would be reduced to something like £200. The committee were desirous of reducing the expenditure on the park as much as possible.

— THE pretty *Callistemon rigidum*, a shrubby plant from Australia, is now flowering freely, trained against a wall in the Royal Gardens, Kew, a position in which it has stood for several years.

— WE understand that her Majesty, the ex-Empress of the French, visited Messrs. Jackman's nursery at Woking the other day to see their fine collection of Clematises, which are now coming into full bloom.

— THE march of improvement will, we hope, never cease, and it has at last reached Golden Square, Soho. We were glad to see some fine masses of lilies warming up the old square with bright colour the other day.

— A FRENCH writer says that *Centranthus macrospilon* makes an excellent salad. Salad-famine during the war led to its discovery, or rather to its use. The plant is an annual, well known to growers of annual flowers.

— A PRETTY species of Loose-strife (*Lythrum flexuosum*) is flowering at Mr. Ware's nursery, Tottenham. It is a rare species, growing from six to nine inches high, and produces a profusion of rosy-purple flowers.

— MR. PEACOCK'S magnificent collection of succulents is gaining for itself a world-wide notoriety. It formed a remarkable feature of the Royal Horticultural Society's show at Birmingham; and this week it has been visited by the distinguished foreigners from Burmah now amongst us.

— THE cultivation of the poppy in France is steadily increasing; it now occupies about 50,000 acres, of the value of 4,500,000 francs, yielding opium to the value of 2,000,000 francs per year. Different samples of opium raised in various parts in Europe yield from eight to thirteen per cent. of morphine.

— PRINCE ARTHUR, on the invitation of the Corporation of Leeds, has, we understand, consented to visit that town on September 19th, when he will open Roundhay Park, which has been purchased by the Town Council for a people's park. It is 600 acres in extent, and has been purchased at a cost of £139,000. It contains a magnificent lake, covering thirty-six acres.

— ROCHESTER CASTLE GARDENS were opened to the public the other day by the mayor, in the presence of a large company. The gardens have been taken on lease by the Corporation from Lord Jersey. A public subscription has been raised for the purpose of laying them out and for other work, which has already cost more than £2,000. We gave a view of the design, which is wretched in the extreme, some time ago.

— LOVERS of alpine plants will be glad to learn that our esteemed correspondent, Mr. J. C. Niven, of the Hull Botanic Gardens, is to edit another volume of "Alpine Plants," the work begun by Mr. Wooster. This is fortunate, both for the book and the cultivator of these charming flowers, as Mr. Niven has devoted many years of loving attention to them, and it would be difficult to find anybody so well qualified to write on them.

— How beautiful are the rock roses now! And well-named "rock roses," for no single rose exceeds them in bright beauty of colour and profuse flowering qualities. They are happiest on poor, light, and dry soils, but thrive in any well-drained soil. They are among the finest of our neglected shrubs. We hope somebody with a garden on a warm soil will study the family thoroughly, and find out for us how many kinds will really survive on ordinary soils.

— THE most beautiful hardy shrub now in flower in our gardens is the white *Spiræa arifolia*. Its elegant flowers, seen among our common shrubs, seem like tossed spray on a sunny sea. At present such noble shrubs are usually thrust into a shrubbery, and there allowed to take their chance. Obviously such fine subjects would look much better isolated on the turf, or associated in small irregular groups, so that each might show its character, and the whole have a picturesque effect. When we pay as much attention to tastefully arranging such noble and long-lived shrubs as we do to those which last only a few months in beauty, we shall find a rich reward.

The Nine Hours' Movement.—The world has sympathised with this movement. Now let the world read the following advertisement, which appeared the other day in a London paper:—"Covent Garden Market, Central Avenue.—Wanted, immediately, four or five strong, active, healthy, hard-working girls for bouquet-making, &c. Early risers indispensable. Usual hours of business from five o'clock a.m. until eleven o'clock p.m. Applications to be made to the Florist's." From five a.m. to eleven p.m. is not nine but eighteen hours, leaving six hours a day for exercise, sleep, toilet, improvement of the mind, home life, and recreation. How long would a "strong, active, healthy, and hard-working girl" hold out at such work, and what kind of human creature would she be after about five years of it?

HARDY PLANTS IN FLOWER ROUND LONDON.

(FROM JULY 4TH TO JULY 10TH, INCLUSIVE.)

BY OUR OWN REPORTERS.

Achillea decolorans Aconitum Napellus al- bum Actinomeris alternifolia helianthoides oppositifolia Alfredia cernua Alisma lanceolata Plantago Allium acuminatum angulosum nutans spherocepha- lum Althaea ochroleuca officinalis rosea vars. Amaryllis longifolia rosea Anchusa officinalis in- carnata Antennaria margaritacea Anthemis Kitabelii Anthericum Dorsetii Asclepias Douglasii princeps Aster albescens glauca pyrenaeus Astragalus alpinus Bocconia cordata Brachycome iberidifolia Butomus umbellatus Calamagrostis Epigeios Calamintha alpina Callichroa platyglossa Callistemon rigidum Calystegia dahurica grandiflora inflata pubescens plena Campanula Grossekii sarmatica Ceanothus Arnoldii Centaura depressa rosea " uniflora Chamaepence Cassabone	Cineraria acanthifolia Cirsium acule Douglasii Clematis cylindrica hybrida Viorna Collonia grandiflora Convulvulus Scammonia Coropsis grandiflora tenuifolia Cyananthus lobatus Datura ceratocaulon Stramonium Dianthus pruinosis sinensis vars. Echinops ruthenicus Epilobium palustre rosmarini- folium Erica vagans " carnea Eryngium maritimum Escallonia illinita Eschscholtzia tenuifolia Francoa sonchifolia Frankenia levis Fremontia californica Ganthheria procumbens Genista anxantica radiata triquetra Gentiana asclepiadea Catesbeii Gilia achilleaeifolia capitata " alba Navaretia Glaucium fulvum Grindelia hirsutula Hypericum calycinum ciliatum dalmaticum dentatum linearifolium Iberis jucunda umbellata Inula salicifolia	Jasione pumila Jasminum pubigerum Lathyrus alatus ineurvus Lavatera unguiculata Ligularia speciosa Liatris elegans squarrosa Lilium auratum Martagon Catantii superbum testaceum Linaria origanifolia pilosa saxatilis Linum salsoloides Loasa tricolor Lonicera brachypoda aureo-reticu- lata Lopezia coronata Lythrum americanum diffusum tomentosum Malva moschata " alba Menziesia erecta Micromeria Piperella Monarda didyma Monolopia major Myosotis palustris Oenothera Lamarckiana Youngii Ononis arvensis spinosa Onopordon graecum ilyricum tauricum Oxytropis glabra Palava flexuosa Peganum Harmala Pentstemon barbatus Tor- reyi Phlox decussata vars. Pisum umbellatum	Phyteuma limonifolium spicatum Platycodon grandiflorum vars. Polemonium caeruleum variegatum Prunella vulgaris laci- niata Rhodotypos kerrioides Rhus glabra Rumex Hydrolapathum Salvia bracteata Sapouaria calabrica alba Scolymus grandiflorus Sedum angulatum atratum caeruleum Hillebrandtii ibericum Maximowiczii sempervirens spumum vars. millustrianum Sempervivum alpinum assimile Delassianum fimbriatum Sphenogyne speciosa Spiraea alpina peunsylvanica salicifolia pani- culata venusta Stachys arenaria Statice latifolia nana occidentalis tatarica Stipa gigantea Tanacetum horeale Teucrium chamaedrys Trifolium repens penta- phyllum Tritoma Uvaria " grandis Tunica Saxifraga Yucca flaccida glaucescens Zapania nodiflora
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Plants in this list are almost without exception such as have come into bloom during the past week.

PRIZE ESSAY ON THE POTATO CROP.*

BY GEORGE MAW, F.S.A., G.S., L.S.

The striking evidence obtained from a few experiments made during the year 1864 with the object of ascertaining the sized potato-set most profitable to plant, induced me during the past year to carry out a more extensive series on a systematic scheme. 129 trial plots were arranged with special reference to the following questions, which I propose to consider under separate heads:—

1. As to the influence of the size of the set on the economic results of the crop; *i. e.*, whether any increase, and to what extent, is obtained over and above the extra weight of the set, in the planting of large in lieu of small sets.

2. As to the influence on the crop of the distance at which the

* "Results of Experiments on the Potato Crop, with reference to the most Profitable Size of the Sets, the Influence of Thick and Thin Planting, &c." Prize Essay. By George Maw, F.S.A., G.S., L.S. Extracted from the *Journal of the Royal Agricultural Society*.

sets are planted; or the results of close and wide planting of various sized potatoes.

3. As to the comparative results from planting similar weights of large and of small potatoes per acre.

4. As to the relative advantages of cut and whole sets.

5. As to the influence of thick and thin planting, and of the size of the set, on the proportion borne between the weights of the sets and the weight of the crop, and the rate of increase under various conditions.

6. As to the relative productiveness of different varieties of potato.

Much diversity of opinion seems to prevail on these points, which are of economical importance in relation to both the farm and garden cultivation of the crop. The selection of the potato-sets appears commonly to be more a matter of present expediency than prospective profit. The general course is to appropriate the largest for use, the very smallest for pig-feeding, the tubers of intermediate size being preserved for replanting; this method of assortment results in the use of sets of from two to three ounces in weight, and a set of less than two ounces is as often planted as one exceeding three or four ounces. Our primary question is whether an increase in the size of the set will produce an excess above the extra weight of the sets planted; such extra weight going to increase the strength of the individual sets without increasing their number?

Every precaution was taken to insure the most perfect uniformity in the conditions under which the various experiments were made. The manure was separately weighed out, and distributed on each twenty superficial feet of ground. The distance—two feet—between the rows was the same throughout the trial ground; and to counteract the influence of any slight variations in the character of the soil, the particular experiments that would be brought into immediate comparison were placed as nearly as possible in juxtaposition. External rows were rejected for the experiments, and planted with part of the ordinary crop; and every individual set was separately weighed and selected to the specified size, and planted to measure, at precise distances.

Notwithstanding these precautions, there was a want of correspondence in many of the individual results, which I would notice as a warning against depending on the evidence of single experiments: for instance, in plots planted under precisely the same conditions, and with no apparent difference in the appearance of the crops, the produce varied to the extent of several tons per acre. Similar inequalities, apparently unaccountable, will be found in all agricultural crops, and in the conduct of experiments every care should be taken that they are fully recognized in the calculation of results. Under the head of "Accidental Variations of Result" at the end of the report, I shall consider this subject more in detail, and endeavour to show the extent to which these adventitious irregularities affect the general tenor of the experiments. It remains now to consider separately the various points to which the experiments relate.

It will be found that I have in no case relied on isolated results, but drawn the conclusions from the general bearing of the series. Throughout the report the term "gross crop" will apply to the whole weight of potatoes produced per acre, and "net crop" to the balance of produce after deducting the weight of the sets from which it was grown.

1. The influence of the size of the set on the economic results of the crop; or whether any increase, and to what extent, is obtained over and above the increased weight of the set in the planting of large in lieu of small sets:—Several separate series of experiments may be cited in evidence of the influence of the weight of the set on the produce of the crop. An average of from ten to thirteen experiments with different varieties, planted one foot apart in the rows, gave the following results:—

Gross Return per Acre.

		tons.	cwts.	qrs.	lbs.	ozs.	
Average of 13 varieties,	1 oz. sets	10	19	3	17	or	17'65 per set.
"	2 oz. sets	12	15	2	14	or	21'03 "
"	4 oz. sets	15	17	2	15½	or	25'39 "
"	6 oz. sets	20	16	1	9	or	33'44 "
"	8 oz. sets	23	8	1	14	or	38'67 "

After deducting the weight of the sets, the net balances of produce per acre will stand as follows:—

		tons.	cwts.	qrs.	lbs.	ozs.	
Average of 13 varieties,	1 oz. sets	9	17	3	0	or	16'65 per set.
"	2 oz. sets	11	11	1	7½	or	19'03 "
"	4 oz. sets	13	9	0	2½	or	21'39 "
"	6 oz. sets	16	13	1	16½	or	27'44 "
"	8 oz. sets	18	11	0	16	or	30'67 "

The following are the amounts of net profit per acre for *each oz.* in the increase in the weight of the sets, from 1 oz. up to 8 ozs. (each

oz. in the weight of the set occupying 2 square feet, being equivalent to 12 cwts. 17½ lbs. per acre) of seed:—

	tons.	cwts.	qrs.	lbs.
From 1 to 2 ozs.	1	13	2	7½
„ 2 to 4 ozs., for each extra oz.	0	18	3	14
„ 4 to 6 ozs. „	1	12	0	21
„ 6 to 8 ozs. „	0	18	3	14

The average of a number of experiments with different varieties planted 9 inches apart in the rows, gave very similar results as follows:—

Gross Returns per Acre.

	tons.	cwts.	qrs.	lbs.	ozs.
Average of 11 varieties, 1 oz. sets	10	12	0	23	or 14'21 per set.
„ 12 „ 2 oz. sets	15	2	2	11	or 18'45 „
„ 6 „ 4 oz. sets	17	17	3	12	or 21'99 „

After deducting the weight of the sets, the net balances of produce per acre stand thus:—

	tons.	cwts.	qrs.	lbs.	ozs.
Average of 11 varieties, 1 oz. sets	9	16	0	0	or 13'21 per set.
„ 12 „ 2 oz. sets	13	10	0	21	or 16'45 „
„ 6 „ 4 oz. sets	14	13	0	4	or 17'99 „

The average produce of a number of varieties planted at intervals of 6 inches in the row, also exhibited similar advantages in favour of the larger sets, viz.:—

Gross Returns per Acre.

	tons.	cwts.	qrs.	lbs.	ozs.
Average of 11 varieties, 1 oz. sets	13	4	1	20	or 10'85 per set.
„ 10 „ 2 oz. sets	15	19	0	12	or 18'15 „
„ 3 „ 4 oz. sets	22	0	2	3	or 18'11 „

After deducting the weight of the sets the net balances of produce per acre stand thus:—

	tons.	cwts.	qrs.	lbs.	ozs.
Average of 11 varieties, 1 oz. sets	12	0	0	13½	or 9'85 per set.
„ 10 „ 2 oz. sets	13	10	1	27	or 11'15 „
„ 3 „ 4 oz. sets	17	3	1	5	or 14'11 „

Every step in each of these three series of experiments gives, without an exception, unequivocal evidence that each increase in the weight of the set produces more than a corresponding increase in the weight of the crop. The following statement will, however, show that the advantage in the employment of large sets is much less striking in the early than in the late varieties; out of the examples before given the produce of the early varieties, planted one foot apart in the row, exhibit the following result:—

	Gross Crop.				Net.			
	tons.	cwts.	qrs.	lbs.	tons.	cwts.	qrs.	lbs.
Average of 7 early varieties, 1 oz. sets	9	3	3	26	8	11	3	8¾
„ 7 „ 2 oz. sets	10	14	2	17	9	10	1	10½
„ 6 „ 4 oz. sets	13	19	0	7½	11	10	1	22½
„ 6 „ 6 oz. sets	15	6	0	22	11	13	1	2½
„ 2 „ 8 oz. sets	7	17	0	21	2	19	3	23

Although there is throughout an increase over and above the extra weight of the sets, the advance between the larger sizes is not very marked, and is much below that wherein the early and late sets are averaged together. There is even a falling off in the produce of the 8 oz. sets, in comparison with those weighing 6 ozs.; but this is partly from accidental circumstances; the 8 oz. sets being much sprouted before planting, indeed all the larger sets of the early varieties were much more advanced than those of smaller size. After separating the early sorts from the general average results of early and late, the average produce of the late varieties, taken separately, will stand as follows:—

	Gross Crop.				Net.			
	tons.	cwts.	qrs.	lbs.	tons.	cwts.	qrs.	lbs.
Average of 6 late varieties, 1 oz. sets	12	0	0	15	11	7	3	26
„ 6 „ 2 oz. sets	15	3	1	19	13	19	0	13
„ 6 „ 4 oz. sets	17	16	0	24	15	7	2	11
„ 3 „ 6 oz. sets	30	6	2	11	26	13	2	19
„ 4 „ 8 oz. sets	31	3	3	24	26	6	2	26

(To be continued.)

Advertising Cabbage Seeds.—Millard, the banker and newspaper speculator, who died a little while back in Paris, and who founded the Paris *Petit Journal*, which at one time had a daily circulation of nearly half a million copies, was an enthusiastic believer in the advantages of liberal advertising. One day he had at his table nearly all the proprietors of the leading Paris dailies. They conversed about advertising. Millard asserted that the most worthless articles could be sold in vast quantities, if liberally advertised. Emile de Girardin, of *La Presse*, who was present, took issue with him on the subject. "What will you bet," exclaimed Millard, "that I cannot sell in one week one hundred thousand francs' worth of the most common cabbage seed under the pretext that it will produce mammoth cabbage heads? All I have to do is to advertise it at once in a whole-page insertion of the daily papers of this city." Girardin replied that he would give him a page in his paper for nothing if he should win his wager. The other newspaper publishers agreed to do the same thing. At the expiration of the week they inquired of Millard how the cabbage seed had flourished. He showed them his books triumphantly, and satisfied them that he had sold nearly twice as much as he had promised, while orders were still pouring in; but he said the joke must stop there, and no further orders would be fulfilled.

THE PROPAGATOR.

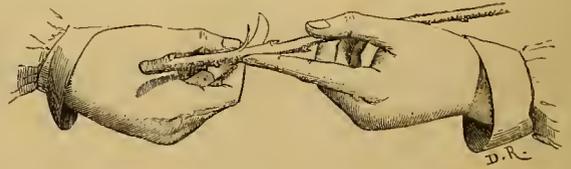
THE ART OF GRAFTING.

(Continued from Vol. I., p. 713.)

GROUP 4.—CLEFT-GRAFTING.

GENERAL DIRECTIONS.—This method is employed for propagating the greater part of woody deciduous trees and plants. The scion is a portion of a branch furnished with one eye or several. For a young stock a short scion is to be preferred. If the stock is a large tree, in a cold but rich soil, and in a damp climate, scions with four or five eyes are preferable to shorter ones; while, on the other hand, in poor soil, and in a warm dry climate, short ones are best.

Let us take a medium-sized one, with two or three buds, and three or four inches in length. In preparing it, we cut the lower part on two sides, so as almost to resemble two sides of a triangle. We say *almost*, as the two sides do not meet in a sharp edge until near the point; a strip of bark being often left, which gradually widens from the point to the top of the cutting. Opposite this edge is the back of the cutting (which is not touched with the knife), commencing immediately under an eye, and ending in a point at the lower extremity of the scion. In some cases we shall see that we can continue to have a bud on the back of the cutting; and in some modes of cleft-grafting the scion is cut with an even face on both sides, instead of being wedge-shaped or



Preparation of the Cleft-Graft.

triangular in form. When it is desired to set the scion evenly on the stock, a small horizontal or oblique notch is cut on each side at the top of the sloping cut. The preparation of the scion is effected more easily by holding it extended along the forefinger of the left hand. With the grafting-knife in the right hand, it is cut and smoothed down on both sides; the least inequality or roughness would be an obstacle to its perfect coincidence with the stock; the point should be slightly blunted in order to facilitate its slipping in smoothly. We may remark, as a useful hint to beginners, that the operator has more power and command of his implement if he keeps his elbows close to his sides. Whether the stock be entire or provisionally headed down, it is finally cut at the moment of the operation at the place destined to receive the graft, in order that the grafting may be performed on a freshly-cut surface. When the saw or the sécateur is used for this purpose, the cut is smoothed down with the pruning-knife, so as to remove all inequalities from the surface. If the stem is of medium thickness, not more than one graft is made on it, and the cut is made in a slightly oblique direction; but if the strength of the stock requires several grafts, then the cut is made horizontally (for crown or cleft-grafting). Cleft-grafting is effected with one or several scions; the various processes consist in employing them either when woody or herbaceous; in spring, summer, or autumn on the body of the tree, on the top, or at the angle of the branches.—*C. Ballet.*

(To be continued.)

Grafting-Wax.—This is an article that everybody should keep on hand, ready for use whenever needed, for it is valuable for various other purposes besides that of grafting. Wounds made in pruning large trees will heal over much sooner if coated with this wax; and if a piece of bark is accidentally stripped from a tree, the place should be covered over with it, and the wood will remain sound and healthy underneath. There are several receipts for preparing this wax, and I have found the following better than any one tried:—Melt in a basin one pound of tallow, two pounds of bees-wax and four pounds of resin; stir well together, and keep in a cool place in the dish in which it was melted. If bees-wax is a very costly item, one-third less quantity can be used.

THE FLOWER GARDEN.

GUNNERA SCABRA.

THIS vigorous and noble plant Mr. Darwin met with in a region where the vegetation is so luxuriant that the branches of the trees extend over the sea, somewhat like those of a shrubbery of evergreens over a gravel walk.

"I one day noticed," he says, "growing on the sandstone cliffs some very fine plants of the Panke (*Gunnera scabra*), which somewhat resembles rhubarb on a gigantic scale. The inhabitants eat the stalks, which are sub-acid, tan leather with the roots, and prepare a black dye from them. The leaf is nearly circular, but deeply indented on its margin. I measured one which was nearly eight feet in diameter, and therefore no less than twenty-four feet in circumference! The stalk is rather more than a yard high, and each plant sends out four or five of these enormous leaves, presenting altogether a very noble appearance." Of a spot in the same neighbourhood he says:—"The forest was so impenetrable that one who has not beheld it cannot imagine so entangled a mass of dying and dead trunks. I am sure that often for more than ten minutes together our feet never touched the ground, and we were frequently ten or fifteen feet above it; so that the seamen, as a joke, called out the soundings!" Mr. Darwin does not speak of the inflorescence, which is more remarkable than the leaves. The little flowers and seeds are seated densely on conical fleshy masses a few inches long, and these in their turn being seated as densely as they can be packed on a thick



Gunnera scabra. (From a sketch in Battersea Park, September 1870.)

stem, the whole has the appearance of a compound cone several feet long (on strong plants), very heavy, and perhaps the oddest-looking thing ever seen in the way of fructification. This great spike springs from the root itself, the leaves also springing from the root, as in the case of the rhubarbs. Two plants in an artificial wet peat bog near London—one in deep rich soil, with the crown well raised above the level, and the whole protected under a couple of barrowloads of leaf mould; the other left exposed, and not allowed any particularly good soil, grew very well. Both plants survived the severest winters, but the protected and well-fed one grew much the larger. The leaves of the larger plant used sometimes to grow four feet in diameter, the texture being of extraordinary thickness and rugosity. In the Royal Gardens at Kew it grows to a larger size than that. The bottom there is the reverse of bog, while the situation is warm and sheltered. The Kew people met its wants by building a little bank of turf around it, so as to admit of its getting a thorough dose of water now and then, while in winter it was protected with dry leaves and a piece of tarpaulin. Similar protection, plenty of water in summer, and a warm and sheltered position, are all that are necessary for success with this very striking subject. It is not difficult to obtain, and may be easily raised from seed, though that is a slow way. It should be planted in some isolated spot, and not, as a rule, in the "flower-garden proper," as it must not be disturbed after being well planted, and would associate badly with the ordinary occupants of the parterre.

In places with any diversity of surface it will be easy to select a spot well open to the sun and yet sheltered by surrounding objects.

The plant, of which our woodcut is an illustration, was growing in a damp, somewhat hollow bed along with several moisture-loving plants, and here it had stood several winters uncovered and without injury,

THE POLYANTHUS.

BY JOHN WIGGINS, ISLEWORTH.

CULTIVATORS of this charming spring flower are now of opinion that it is essentially better to have their Polyanthus strong in habit and constitution, and bearing large trusses well laden with showy flowers, of large size and distinct in colour, than to insist on that perfection of form, without which florists used to consider them worthless. In a true florist's flower the pips should be large, quite flat, and circular, with the exception of the small indentures between each division of the limb; the eye should be perfectly round, and of a bright yellow, quite distinct from that of the ground colour, and the tube well filled with the thrum or anthers; for needle-eyes are considered a great defect. The ground colour should be of a dark rich brown, or crimson, resembling velvet, or it may vary from black to a bright scarlet, but in every case it must be pure, distinct, and constant. The edging should resemble bright golden lace, clear, distinct, and unmixed with the ground colour along the inner margin; and so closely ought it to resemble the colour of the eye as scarcely to be distinguishable from it. The trusses should also be large, compact, and well furnished with bloom. Although all these qualities are thought to be necessary in a really good florist's flower, it is found that such flowers not only often produce inferior flower spikes as regards quantity of individual blooms, but that the blooms themselves are frequently much smaller than some of the pin-eyed kinds. For spring garden purposes, therefore, I select kinds having a good habit and plenty of flowers, and, above all, bright, large, and showy blooms. As regards habit, size, and quantity of bloom—we have obtained all that can be desired; but in the way of new and improved colours little has of late been effected. This season I had plants with trusses carrying from sixteen to twenty-four blooms, each of which was larger than a two-shilling piece.

PROPAGATION.

Common garden varieties are usually raised from seed, which germinates more freely than that of most plants. It may be sown at any time after it is ripe; some sow in the autumn, some in spring, and others immediately after the seed is gathered. For my part I prefer sowing late in April or early in May, in shallow pans or wooden boxes, which are placed in cold frames, and kept a little shaded and close for a time. The seeds quickly germinate, and as soon as the young plants make two rough leaves, I prick them off singly into thumb pots, or six or eight into a four-inch pot, which will be sufficient for them until midsummer. I then prepare beds for them by deeply working the soil, and adding to it some well-decayed manure. Into these beds the seedlings, when large enough, are planted in lines a foot or fifteen inches apart. The finer, or named varieties are increased by division of the crowns after they have done blooming, and are either inserted at once in beds or borders, or, as is more generally the case with named varieties, they are reotted.

SOIL.

Polyanthuses grow vigorously in almost any garden soil, more particularly if it is rich and a little moist. Where trouble is taken to form a compost especially for them, I should recommend a strong fresh loam, enriched with well decomposed leaf mould, and rendered porous by means of a liberal admixture of sharp sand. Thoroughly decomposed cow or stable manure may also be advantageously employed; but to such manures, unless really necessary, I have a great aversion; for not only do they harbour grubs and other insects, but they also encourage a luxuriance that proves detrimental to the quality and quantity of the flowers. I have frequently produced beds of polyanthus of great excellence without the assistance of

any manure, relying simply for success on deeply worked thoroughly pulverised soil.

SITUATION.

As the *Polyanthus* is somewhat impatient of heat and drought, a cool, partially shaded and sheltered situation suits it best. If, however, the plants are copiously supplied with water throughout the dry season, they will stand a good deal of exposure to the sun. Where their requirements can be fully attended to, perhaps the best aspect for them would be a north-west one. The finer kinds mix well with alpiners; the others look well in front of shrubberies, where they should be arranged in clumps. Such as are still interested in the true florist's kinds should grow them in pots. When in bloom remove them to some shady nook, such as between two rows of hedges—in fact, anywhere where they can be kept cool, shaded, and protected from bright sun, wind, and heavy rains.

THE DAHLIA AS A DECORATIVE GARDEN PLANT.

THE Dahlia is so constantly before the public at exhibitions in a cut state, that its usefulness for the decoration of the flower garden is in some danger of being underrated. For planting in shrubby borders, however, or for filling large beds in grass plots, there is nothing more attractive when massed with a due regard to harmony of colours and heights. Take a shrubby border, for example, with ample width for planting, and imagine the effect that would be produced by a background of hollyhocks, then a line of Dahlias, another of *Salvia patens*, and then a line of *Pentstemons*, edged with *Tom Thumb Antirrhinums*. A large circular bed, with a few hollyhocks in the centre, then a broad band of Dahlias, with *Antirrhinums*, *Pentstemons*, and *Phloxes* in the front, would also have a charming effect. Where lines cannot be arranged in shrubby borders, Dahlias might be planted singly; and there are many other ways in which, with a little taste and judgment, they might be employed. I look back with regret on the beds of Dahlias I used to see twenty years ago, now displaced by many plants much less ornamental. The Dahlia, I need scarcely say, possesses rich, striking and effective hues of colour. From pure white to nearly black, from the delicate tinge of soft primrose to rich golden yellow, there are included manifold hues and combinations of colours, allowing of an almost unlimited choice. The four groups into which Dahlias are divided—viz., show, fancy, bedding, and pompones—all yield excellent varieties. A selection from the two former groups is absolutely necessary, in order to get those that produce flowers somewhat erect and striking, and not, as is common with some, hanging downwards, leaving only the backs of the flowers exposed to view. Among show flowers, such a habit of growth as *Fellowes's Queen of Beauties*, and among fancies such as *Legge's Glory*, are just the types to obtain. There is no uniformity as to the height to which the Dahlia will grow, so there is plenty of choice when forming a mass; the average height may be set at from 3½ feet to 5 feet. The proper average height for bedding Dahlias should be from 2 feet to 2½ feet; they should have a rigid, compact growth, and be very free-flowering. Some should bloom early, others later—all points to be remembered. If they lack the fine form and fullness of the show varieties, the deficiency is more than compensated for by the masses of flowers they produce at the height of the blooming season. The following varieties can be confidently recommended: *Alba floribunda nana*, pure white; *Anora*, yellow tipped with lake; *Bob Ridley*, red; *Cloth of Gold*, bright yellow; *Crimson Gem*, rich crimson; *Prince Arthur*, crimson; *Rising Sun*, intense scarlet; *Royal Purple*, purple; and *White Bedder*. There are a few edged flowers, but as a rule they are not so free-blooming nor so continuous in bloom as the self-coloured flowers. The *Pompones*, *Bouquet*, or *Lilliput Dahlias* have small, compact, and interesting flowers, and are extremely useful for cutting for bouquets. Many of the flowers are models of form, and are likewise very pretty. Their usefulness for decorative purposes in the flower garden is somewhat marred by the fact that generally the pompones Dahlias are tall in growth, and have a loose habit. Some few of them have, however, dwarf, close habits, and are beginning to be much used for bedding purposes. In planting Dahlias in ribbon lines or small beds, or as an edging to larger beds, it is often essential to keep them dwarf, and that with as little trouble as possible. Stakes are apt to show themselves, and have an unseemly appearance, and it is well to avoid their use as much as possible. They are indispensable to the taller-growing kinds; but in the case of the dwarf varieties it is the practice of some growers, as soon as the plants are large enough to require security from breakage by wind, to carefully remove the earth from one side of the plant, and gradually press down the main shoot, without breaking it, towards the earth. It is then secured by means of two small stout sticks placed crosswise, and as soon as the side

branches are large enough to be in danger from wind, they are pinched near the main stalk sufficiently sharp to make them fall towards the earth. This injury, however, is only temporary, as they soon recover themselves and begin to grow upwards, and bloom most effectively. This operation is performed more than once if necessary, until the plants fill out and meet, and so help to sustain each other against the action of the wind; at the same time the soil is quite covered, and only green leaves and masses of striking flowers are seen.—*Quo.*

Foxgloves.—Among the many hardy flowers in bloom during the present month, none exceed in gracefulness and beauty of colour the common foxglove—"a third part bud, a third part blossom, a third part past, a type of the life of this world," as the author of "The Stones of Venice" has it. The white and common kinds are not flowers that suggest the desirability of improvement, but even these have been improved from the florist's point of view, and there is now in some gardens a strain with the flowers variously and prettily marked and spotted. These particularly are well worthy of culture, and in no way more attractive than with their great spikes standing amidst low shrubs and covert in wild places or in woods, copses, or rough shrubberies. All that is necessary to establish them in such places is to take a little of the seed in the pocket, and when walking about scatter it here and there in spots where it has a chance of vegetating. This should be done as soon as the seed is ripe, and not deferred till spring, as thereby nearly a year would be lost.

Saving Seed of Roses.—The rose shears will soon be in constant operation, cutting off every faded flower. May I ask that the hand may be stayed when about to snip off those which are likely to produce seed? The endless variations of colour and shape of the flowers, the manner which those seedlings reproduce the traits of the parent, at one time the leaf, at another time the flower, will induce an interest in the work which will amply repay the annoyance of seeing a few seed-pods scattered about among the flowers throughout the summer. The seedlings will not, I promise, produce all double flowers—but even a briar, with blossoms as large again as those of the dog-rose, and having a colour equal to that of *Count Cavour*, would not, I imagine, be despised; then there would be yellow briars and briars of every shade of colour. But they do not all come briars, even if the seeds are taken from roses worked on that stock; a good proportion come roses, passable roses, with an increased vigour, although deficient of the quality to bring them up to the standard of the parent as to form. The colour will be found somewhat after that of the parent, although yellow kinds often produce seedlings that bear pink blooms, with leaves like those of the parent; but the blooms are larger and of a deeper colour than those of the common briar. Those who do this find they have plenty of stocks to work favourite varieties upon; besides the pleasure of having one's own seedlings, and a chance of raising, now and then, something good.—*HENRY MILLS, Enys, Cornwall.*

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Lilium giganteum.—In a warm nook between two hedges in Mr. Ware's nursery, at Tottenham, this noble lily is now beautifully in bloom. It has stood in the same position quite unprotected for these last two years.

Carnation Blooms.—In order to preserve the blooms of pinks, picotees, and carnations for exhibition purposes, a fine plump bud just on the point of opening is selected, and drawn through an inverted six-inch pot so as to leave the bud resting above the hole. In order to ward off heavy rains and strong sunshine, another smaller pot is inverted over the bud so as to keep all secure. In this way the blooming period is considerably lengthened, and the quality of the blooms preserved.—*W. F.*

Verdant Wigwams, &c.—In the Royal Botanic Gardens at Dublin, there is a singular wigwam made by placing a number of dead branches so as to form a framework, and then planting *Aristolochia Siphon* all round these. It runs over them, and the large leaves make a perfect summer roof. I write to suggest that this be done in various other cases with some of our fine-flowering climbers. These would often look better on such structures than if tortured on walls or trellises. We should have beautiful masses of bloom outside, and grateful shade within. The autumn-blooming *Clematis Flammula* is also capitally suited for this purpose.—*Bowen.*

Bare Beds in Hyde Park.—I see that in No. 32, you very properly direct attention to the state of the beds near Albert Gate, Hyde Park. It must be confessed that it is a complete waste of time and money to plant tender plants out of doors for such a short time as now remains of what may be termed "the season" for tender outdoor-plant display. May I be allowed to ask why the beds are kept thus long without their summer occupants? Several so-called sub-tropical plants, notably some of the *Cannas*, stood out last winter in the plantation near the Serpentine Bridge in Kensington Gardens, and are now growing strongly. Indeed, *Cannas* generally would have been much the better for being planted out earlier. I remember when Mr. Bullen had the management of the bedding-out in Hyde Park, that he commenced to "bed out" early in May, and nearly all the "tropicals" were out by the first week in June. Thus treated, by this time they would make attractive ornaments, whereas if put out now, by the time they get well established it will be time to take them in again.—*T. SPANSWICK, Hammermith.*

THE HOUSEHOLD.

A CHAT RESPECTING SALADS.

(From Blackwood's Magazine.)

"I WONDER," said MacTavish, as the materials for the salad were placed upon the table, "whether anyone has ever written a book upon salads?"

"Not to my knowledge. Even Brillat Savarin, the only man who has written tolerably well upon the philosophy of dining, has not thought proper to devote a chapter to the subject, though it might well have tempted him. I think if any enterprising publisher would give you and me, say a thousand guineas for the job, we could get up a nice little volume, in which we would discuss it historically, gastronomically, philosophically, poetically, medicinally, and anecdotically—make it, in fact, the text-book of the subject, now and for evermore."

"I never wrote a book in my life, and don't intend," replied MacTavish; "but I would read such a book if it were published, and if it were the work of a gentleman, a scholar, and a man of the world."

"Rare combination! Supposing I now—excuse the modesty—were to write the book, how should I begin? *Firstly*, I should look into the etymology of salad, and should find that the word was derived from *sal*, salt, and that therefore it means something salted, or *salada*, as they say in Spanish and Italian. This would afford an opportunity, *in limine*, for diverging into an historical chapter or two upon salt, beginning with the creation of the world and the salt sea, and why the sea is salt, and could not be fresh with safety to the denizens of the dry land. If I did not go into the geology of the subject, and descend into the salt-mines, or explore the salt-licks of which the buffaloes are so fond, I could at all events begin with Lot's wife, and end with the revenue of £5,300,000 per annum, which Lord Cranbourne informed the House of Commons and the country was paid by the poor people of India as a tax upon the sea-salt, almost the only condiment which they use with their wretched dinners of boiled rice. . . . Too much salt in the book, or the salad, would be equally misplaced; and I should be compelled to reserve a little space for vinegar, its history, traditions, and uses; for olive oil, that choice blessing of all-bounteous heaven, with which kings were formerly anointed, and without which a true and wholesome salad would be impossible; for pepper, for mustard, for sugar, and for hard-boiled eggs."

"For sugar?" inquired MacTavish, dubiously.

"Yes sir, for sugar," I replied, emphatically, with a look that would have suited Johnson when snubbing Boswell. "Without a judicious, a slight, but a palpable flavour of sugar, a salad, however scientifically prepared in other respects, must be deposited from the first to the second rank, and belong to the insipid mediocrity which, in salads as in poetry, is detestable to gods and men. The sugar is necessary to harmonise all the other ingredients, so that the complete work should be without a flaw, a defect, or a note of discord; and as perfect in its way as a poem, a picture, a statue, a tune, a cathedral, a stained-glass window, or any other work of art."

"Does Shakespeare, who does not mention tobacco—the more's the pity!—make any mention of salad?"

"He does, five or six times. In 'Henry VI.,' Jack Cade, in his extremity of peril when hiding from his pursuers in Iden's garden, says that he has climbed over the wall to see if he could eat grass or pick a salad, 'which is not amiss,' he adds, 'to cool a man's stomach in the hot weather.' In 'Anthony and Cleopatra,' the passionate Queen speaks of her 'salad days, when she was green in judgment, cool in blood.' Here the word means raw and unripe, but a proper salad well-prepared is neither. Hamlet uses the word with the more ancient orthography of 'sallet,' and says in his speech to the players, 'I remember, one said, there were no *sallets* in the lines to make them savoury.' By this he meant that there was nothing piquant in them—no Attic salt. Now, the salad which we are about to mix shall be fresh and cool as in Cleopatra's allusion, and piquant as in Hamlet's. A salad is no salad if it do not partake of both qualities."

"I wonder," said Mr. MacTavish, "what the cookery-books say upon the subject; though, to the best of my knowledge and belief, there has never been written or published a good cookery-book fit for the reading of any one better than the habitual denizens, male or female, of the kitchen. Waiter! fetch Mrs. Rindell's cookery-book from the library."

The book was brought, and MacTavish read aloud, "How to make a French salad.—Chop three anchovies, a shallot, and some parsley small; put them into a bowl with two tablespoonfuls of vinegar, one of oil, a little mustard and salt. When well mixed add by degrees some cold roast or boiled meat in very thin slices; put in

a few at a time, not exceeding two or three inches long. Shake them in the seasoning and then put more; but cover the bowl close, and let the salad be prepared three hours before it is to be eaten. Garnish with parsley and a few slices of the fat."

"Make your salad three hours before you consume it!" said I. "Three minutes, or *one* minute, will suffice. Mrs. Rindell was a fool—her recipe for what she calls a French salad is execrable. How does she make what I should call an English salad?"

"She has not a word to say on the subject—nothing but the following, which she calls a lobster salad:—

"Make a salad, and put some of the red part of the lobster to it, cut. This forms a pretty contrast to the white and green of the vegetables. Do not put much oil, as shell-fish absorb the sharpness of the vinegar. Serve in a dish, not a bowl."

"Mrs. Rindell knew nothing of the subject. Anchovy and slices of meat and 'fat' are no fit ingredients of a salad, either French or English. And then the crass stupidity of her recommendation of two spoonfuls of vinegar to one of oil! The woman was ignorant of the merest A B C of her art, and knew as much about a salad as Nebuchadnezzar when he cropped the herbage, or as any donkey who browses upon thistles with no other condiment than his hunger. Let us hear what Fracatelli says."

Fracatelli's book was sent for, but afforded no information except about a Russian salad with lobsters, a German salad with herrings, and an Italian salad with potatoes—none of them the true, fresh, seasonable summer salad which Frenchmen make so well, and which Englishmen can equal, if not surpass, if they will take the trouble.

"Never mind the stupid cookery-books," said MacTavish; "let us talk."

"Of all the vegetables of which a salad can be made, a lettuce is unquestionably the best. Have the kindness, Mr. MacTavish, to assure yourself that these lettuce-leaves are quite dry. There must be no drops of water left upon the leaves to mingle with and weaken the vinegar or object to coalesce with the oil. 'The lettuce, when it is *panachée*,' says the 'Almanach des Gourmands'—that is, when it has streaked or variegated leaves, and is not all green like a cabbage—is truly a salad of distinction'—*une salade de distinction*. None but a Frenchman could pay such a compliment. The milky juices of the lettuce are similar in their soporific effects, though in a minor degree, to those of the poppy, and like opium predispose the mind of him who partakes wisely but not too well, to repose of temper and philosophic thought. There should always be a flavour of onion—spring onions are best—in a salad, if as the Frenchman says, it is to be one 'of distinction.'"

"Here they are," said MacTavish, "young, fresh, and tender, and about the eighth of an inch in diameter."

"The right size. Chop them up fine. Next to the lettuce comes the cucumber as the best material for a salad. Dr. Johnson, or some other burly big-wig of criticism, declared that the best thing you could do with a cucumber, after you had prepared it with much care and thought, and with all the proper ingredients, was to throw it out of the window. But the great lexicographer was a man of strong prejudices, or he would not have gone out of his way to libel Scotland—a great country, sir—and the Scotch a noble people, who have made their mark in the world, sir. Neither did he know everything, or he would not have traced the etymology of 'cucumber'—he was one himself—to *cœur méchant*, for his heart, notwithstanding his infirmities of temper, was essentially kind. He was a gross eater, a glutton—a *gourmand*, not a *gourmet*: and there is as wide a distinction between the two as between a wolf and a lap-dog. It is my conviction, in spite of Dr. Johnson—even had he been a Doctor of Medicine or of Divinity, and not a mere Doctor of Laws, a title which signifies nothing, but that the man who bears it is an honorary magnate of the republic of letters—that a cucumber, cut in the thinnest possible slices, and with the proper seasoning of vinegar, oil, salt, pepper (and no sugar), and either with or without an accompaniment of spring onions, or the French *ciboule*, is a diet as wholesome as it is savoury and refreshing. The moot point as regards cucumber is, whether it should be sliced with or without the rind. My excellent friend and physician from the Shetland Isles, the author of the 'Cyclopædia of Medicine,' a better authority than Dr. Johnson, maintains that the rind of the cucumber is the best part of it, as that of the lemon is, for flavour and aroma, and that, moreover, it very materially aids the digestibility of this particular form of salad. For my part, I am content to sit at his feet a disciple, and accept his dictum as a dogma. Third in my list of salads is *endive*, that comes to us in the winter, when we have no other such green and pleasant visitor. And after *endive*, recommend me to celery, without admixture of any other vegetable, as the basis of what the 'Almanach des Gourmands' calls a *salade très distinguée*. The only peculiarity about it is, that you should double

or treble the quantity of mustard which you would use for lettuce or endive. Though not strictly a salad, there is a mixture, very common in early summer in Italy, which deserves honourable mention—boiled *asparagus*, allowed to grow cold. With the usual dressing it is far preferable in this way to the hot asparagus and melted butter which is the usual dish in this benighted country, where, as Voltaire says, there used to be '*cinquante religions et une seule sauce!*'"

"All these salads are good," interposed MacTavish, "but I think, lettuce excepted, there is one other that transcends them all. Were you ever in America?"

"Yes, for my sins."

"And I," said MacTavish, "for my merits and the increase of my experience. Having been there, either for your sins or your virtues, you must have dined at the New York Hotel or at Delmonico's; and if it were in the summer-time, with the heat at 104° in the shade, as it has been during this fiery July, as I learn by a letter I have just received, you must have partaken of a tomato salad."

"I was coming to the tomato," I replied. "It is a noble fruit, as sweet in smell as the odours of Araby, and makes an excellent, and, were I a Frenchman, I would say, an illustrious salad. Its medicinal virtue is as great as its gastronomical goodness. It is the friend of the hale to keep them hale, and the friend of the sick to bring them back into the lost sheepfolds of Hygeia. The Englishman's travelling companion, the blue pill, would never be needed if he would pay proper court to the tomato—not as we consume it in England, as a sauce, but as a cooked vegetable, stewed, or, better than all, as a salad. Would that, in our cold climate, it could be grown to perfection!"

"Amen to that sweet prayer!"

"I have now mentioned, I think, all the main ingredients of the true, fresh, summer salads. The minor ingredients are water-cress, which is not to be highly recommended; the common mustard and cress, which are good if used sparingly; and the beetroot. The latter, after being boiled and allowed to cool, may be cut into thin slices and advantageously compounded with the lettuce and the endive, but should never be used with the cucumber or the tomato. It spoils the colour of the one, and is an unnecessary surplussage to the colour of the other. The true lover of salad need not be deprived of his favourite food at any period of the year; for when the fresh green vegetables fail, there are always potatoes, onions, and beetroot to fall back upon. The Russians and the Germans make a very excellent salad of cold potatoes, cut into slices about an eighth of an inch thick, with thinner slices of fresh onions and beetroot, and a sprinkling of parsley chopped very fine.

"In addition to these, which may be called the legitimate salads or salads pure and simple, compounded solely of vegetables, are lobster salads, ham salads, chicken salads, and mixtures, such as the Dutch and Germans make with sausages, herrings, anchovies, and sardines. All such messes ought to be called mayonnaises, and not salads. They are only fit for *gourmands* and not for *gourmets*; and those, more especially, which are mixed with fish of any kind are an abomination.

"And having discoursed so far, let us proceed to the business immediately before us—our own dinner and salad. You will do the work, Mr. MacTavish, while I do the talking. Place the egg in the bowl and carefully remove the white. It must have been boiled ten minutes at least, or it will not answer its purpose, which is simply to add a little consistency to the mixture which we are about to make. Half-a-dozen broad Windsor beans, well boiled, with the skins removed, would answer the purpose still better if beaten into a *purée*; but for to-day, as there are no beans, the egg must suffice. The next time we make a salad the broad beans shall be provided, and no animal ingredient of any kind shall interfere with the purely vegetable character of the dainty. Now add a teaspoonful of salt and three teaspoonfuls of mustard. I hope the mustard is genuine, and not adulterated trash—ten per cent. of mustard and ninety per cent. of flour coloured with turmeric, which is sold by the rascal grocers of this swindling metropolis, for whose special behoof it were to be wished the pillory and the whipping-post could be revived. To be quite sure of the requisite pungency, add a little cayenne pepper, and pound the mixture well together at the bottom of the bowl with a silver spoon. Next add a spoonful of vinegar, and discard the silver for an ivory or hardwood spoon. Here it is to your hand. Common vinegar, if pure, will answer the purpose; but for the perfect salad, tarragon vinegar, odoriferous as a garden of herbs, is a *sine quâ non*. Stir all these gently together for one minute; next add two spoonfuls, not stinted, but brimming over, of the best olive oil of Lucca. [It is worthy of note that the capital cook who writes in the *Queen*, under the signature of "The G. C.," strongly advises that the oil should be applied before the vinegar.—ED. GARDEN.] 'Niggard of your vinegar, prodigal of oil,' is an old maxim

that every salad-maker should act upon. Stir again for a minute or two, till the ingredients are well mingled; and then, as the finishing touch, add half a teaspoonful of brown sugar; once again ply the spoon for a minute, when the mixture will be ready to receive half-a-dozen little spring onions cut fine, three or four slices of beetroot, the white of the egg cut too small, and the lettuce itself—to the beauty of which all the rest are but the adornments. The lettuce, crisp and dry, is the king, of whom the other ingredients are but the ministers and the courtiers. Have a care to remove the hard stock, and use only the tender leaves, with the brittle spinal columns that support them. Do not shake the mixture too violently or too long. It used to be said, *Fatiguez la salade*, but this is error. It is sufficient that every portion of the vegetable should come in contact with the mixture; and a very gentle stirring, so as not to break or bruise the lettuce, is all that is required."

Mr. MacTavish was as docile as a disciple should be, and the salad thus compounded was pronounced to be a success, not merely of that modified kind which in dramatic criticism is delicately called a *succès d'estime*, but such a decided success as at the theatre brings down the bouquets at the feet of a *prima donna*.

Orange Mince.—Peel sweet Havana oranges; remove seeds; slice, and then cut slices into small pieces with very sharp knife. Add finely chopped lemon without peel in the proportion of half a lemon to six oranges; also a finely grated cocoa-nut if desired. Make a thick syrup by dissolving and boiling for ten minutes a pound of sugar in a pint of water; pour this hot syrup upon the fruit. Set it aside to cool. Serve in a glass dish.

Boiled Lettuce.—This, to our taste, is a delicious vegetable, and the *gout* is something indescribable, resembling asparagus or sea-kale, and yet not quite like either. Lettuces may be simply boiled and eaten as other greens, but they can be boiled and served as *entre-mets* in a variety of ways. Have ready some neatly-cut pieces of toast, a pale brown colour; lay them on a dish, a *hot one*; let each piece be of a size to hold the lettuce and one poached egg; pour over the toast a little of the water and some good gravy; if the latter be not handy, a little fresh butter should be spread on the toast previous to pouring the water from the lettuce; place on each piece of toast enough of the boiled lettuce to form a flat layer; neatly trim the edges of the vegetable, and place a poached egg on the top; or, prepare some toast as above, and spread over each piece a thin layer of anchovy or bloater paste, on which lay the lettuce; then season to taste. To prepare the lettuces for boiling they should be well cleansed, and the top of the leaves, if they have the slightest appearance of fading, cut off; leave as much of the stalk as possible, cutting off the strong outer skin. The stalk is, when boiled, the most delicious part. The large cos lettuce makes the handsomest dish, but we prefer the flavour of the drumhead.—*Knife and Fork.*—[The fine Batavian endive, so well-grown about Paris, is not uncommonly used as a boiled vegetable, and in a much more simple way than that above described. It makes a very palatable dish.]

NOTES AND QUESTIONS ON THE HOUSEHOLD.

Martynias.—These make one of the finest pickles we have, and if once tried will always be grown. Sow when the ground is warm; and when large enough, transplant into rows, two feet apart, allowing eighteen inches between the plants.—*Agriculturist.*

Green Shelled Peas for Winter Use.—Will any of your readers kindly inform me as to the best way of preserving green shelled peas for winter use? Can they be preserved in the same way as French Beans?—i. e., by a layer of salt and a layer of beans?—W. P.

Cauliflower Salad.—Boil a cauliflower in salted water till tender, but not overdone; when cold, cut it up neatly in small sprigs. Beat up together three tablespoonfuls of oil and one tablespoonful of tarragon vinegar, with pepper and salt to taste; rub the dish very slightly with garlic, arrange the pieces of cauliflower on it, strew over them some capers, a little tarragon, chervil, and parsley, all finely minced, and the least bit of dried thyme and marjoram, powdered. Pour the oil and vinegar over, and serve.

How to Preserve Vegetable Marrows.—Peel the marrows, take away the seeds, cut the vegetable into small pieces. To every pound of marrow add half a pound of sifted loaf sugar, the rind and juice of a lemon, half an ounce of grated ginger. Put these into a basin and let them stand all night. The next day pour the juice into a pan and let it boil up, then add the vegetable. Boil all together an hour and a half, or until it becomes thick and transparent. If put into a mould which will not affect the acid, the preserve will look very nice when turned out for use. Most vegetables may be prepared in the same way.

Tea.—Tea, in anything beyond moderate quantities, is as distinctly a narcotic poison as is opium or alcohol. It is capable of ruining the digestion, of enfeebling and disordering the heart's action, and of generally shattering the nerves. And it must be remembered that not merely is it a question of narcotic excess, but the enormous quantity of hot water which tea-bibbers necessarily take is exceedingly prejudicial both to digestion and nutrition. In short, without pretending to place this kind of evil on a level, as to general effect, with those caused by alcoholic drinks, one may well insist that our teetotal reformers have overlooked, and even to no small extent encouraged, a form of animal indulgence which is as distinctly sensual, extravagant, and pernicious as any beer-swilling or gin-drinking in the world.—*Lancet.*

GARDEN DESTROYERS.

BARK-BORING INSECTS.

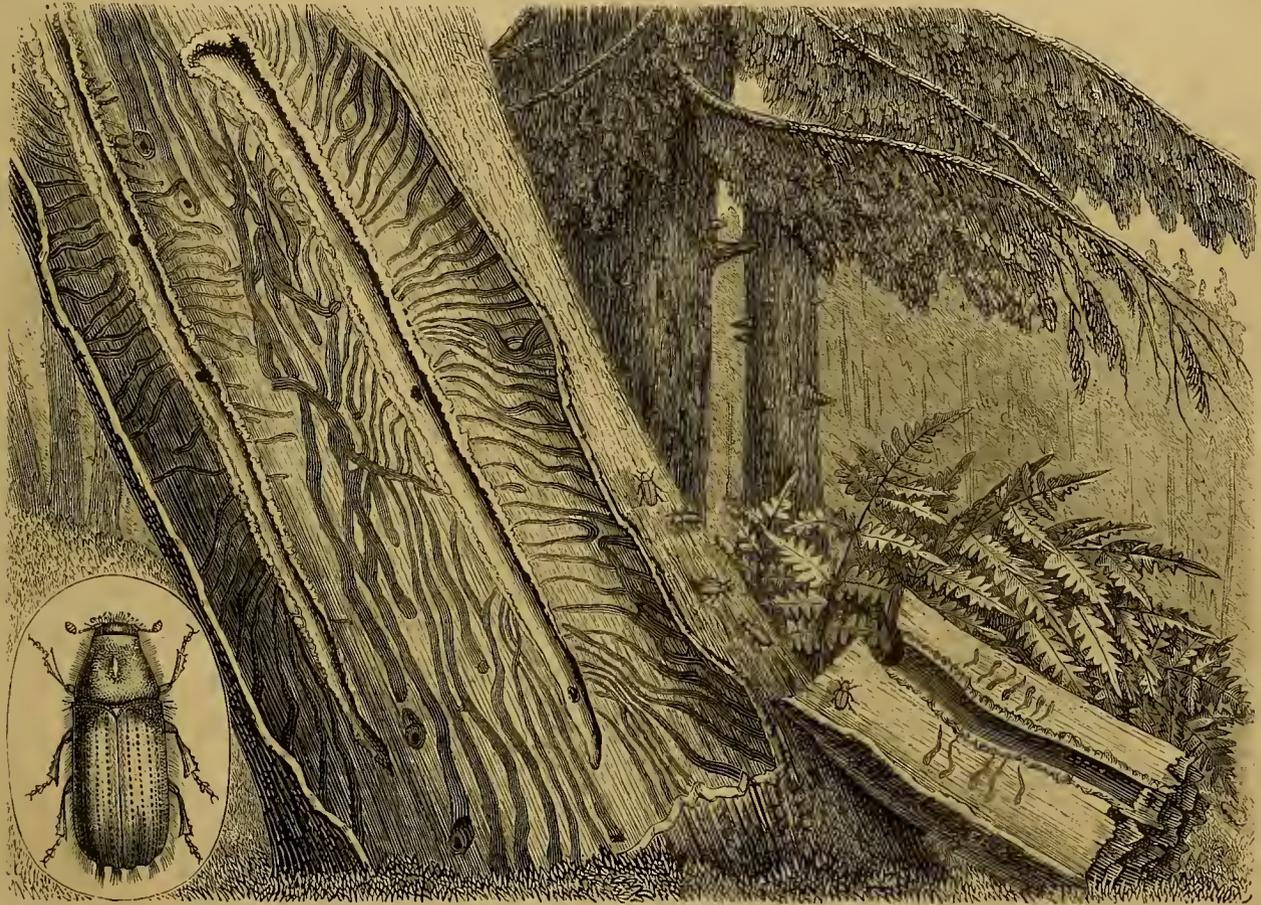
(HYLURGUS PINIPERDA.)

(Continued from Vol. I., p. 629.)

IN our previous paper on bark-boring insects, we drew attention to the different arrangements of the borings made by different species as one of the means of recognising the insect that made them, but we gave no figure of these. We now, however, give one, which will at the same time illustrate that class of borings where the mother gallery is longitudinal in the same direction as the growth of the tree, and will also show the borings of the female parent of the Pine-borer (*Hylurgus piniperda*), of which we gave an account at p. 518. The enlarged figure of the insect in the corner is a very good and characteristic portrait of *Hylurgus piniperda*; and the borings show

country and on the Continent, for the destruction of the mildew and blight attacking vines, hops, roses, fruit, and other trees; and it is now, I believe, almost the sole remedy employed for that purpose, as no other has been found so generally effectual or so convenient of application.

From often-repeated experiments, I have arrived at the conclusion that the beneficial action of sulphur is to be attributed to the presence of a small but variable quantity of free sulphurous acid (occasionally hyposulphurous acid), which exists as a constant impurity in the sulphur of commerce. Sublimed sulphur contains more acid than powdered crude sulphur, and is more certain in its action, while precipitated sulphur, being almost, or altogether, free from acid, is quite useless. I find that when substances are carefully purified from all traces of sulphurous acid by repeated washing with spirit and water, they are equally ineffectual in destroying mildew and other vegetable and animal organisms; that seeds germinate as quickly and vigorously when sown in pure sulphur as in fine sand, and that moulds grow on



The Pine-boring Beetle (*Hylurgus piniperda*) and its Galleries

the large central gallery made by the mother insect, and the smaller borings, made by the larvæ, branching off from it at the point where each egg had been laid and increasing in size as the grub grows bigger. A. M.

SULPHOZONE, A SUBSTITUTE FOR SULPHUR.

READ BY CHARLES ROBERTS, F.R.C.S., AT THE BIRMINGHAM HORTICULTURAL CONGRESS.

SULPHUR in the sublimed, precipitated, or powdered form, is extensively employed by horticulturists, for destroying mildew. The substance to which I have given the name of sulphozone (from its strong smell and powerful chemical action), in order to distinguish it from the sulphur of commerce, is a preparation containing free sulphurous acid as its active and essential principle. For many years past large quantities of sublimed and powdered sulphur have been used in this

the surface when a little organic matter, as flour, has been mixed with the sulphur. I find also that cheese mites are not destroyed by pure sulphur, but live and multiply indefinitely in cheese covered with sulphur; though they are immediately destroyed by commercial sublimed sulphur. On the other hand, when pure sulphur is impregnated with sulphurous acid, it destroys mildew and other minute organisms with an energy proportioned to the quantity of acid it contains; and it does not appear that one form of sulphur possesses any advantages over the others, provided the quantity of acid is uniform. Many other substances which contain no sulphur, when impregnated with sulphurous acid in a similar manner, and to the same extent, are equally effectual in destroying mildew.

In addition to its destructive action on organized bodies, sulphurous acid possesses a powerful chemical action on the organic and inorganic products of decomposing animal and vegetable substances, and the emanations from persons and animals suffering from infectious diseases; hence it is one of the most potent and valuable disinfectants

we possess. It attacks and destroys sulphuretted hydrogen, and neutralises the strong smell of ammonia and other alkaline bases, but without losing its antiseptic properties, or destroying their manurial value. From my experiments and observations, and from well-known properties of sulphurous acid, I may repeat that it is the acid, accidentally present in the sulphur, which is the active agent in the destruction of mildews and blights, and that the sulphur is only the medium for its application. This is a fact, not only of scientific interest, but of great practical and commercial importance; for under the mistaken impression that the sulphur itself is the active agent, great care and expense have been incurred to secure its freedom from acidity, which is by no means necessary. For horticultural purposes, however, it is necessary to limit the quantity of sulphurous acid, or it would prove destructive to the plant as well as to the parasite. This limit I have established practically by experiments made on rose trees infested with mildew; and as the rose mildew is with difficulty destroyed by common sulphur, except by repeated applications, this preparation (to which I have given the name of sulphozone, for reasons already given) may be considered to be of the maximum strength, and four or five times stronger and more potent than sublimed sulphur. In substituting it therefore for sulphur, a great saving will be effected in the cost of sulphur, its carriage, and the time and labour of applying it. There will, moreover, be the additional advantage of not loading the foliage with a large quantity of sulphur powder, which must in some measure impair health by its mere mechanical presence. Sulphozone, being a fine dry powder like sulphur, may be applied in a similar manner, and with the same apparatus, care being taken to use a much smaller quantity (*i.e.*, about a quarter of that of sulphur).

For sanitary purposes a very strong sulphozone has been prepared. This is exceedingly destructive to organic life, and is not adapted for horticultural purposes, except for dressing the stems and branches of deciduous trees in winter, and for destroying insects where it can exert no deleterious influence on surrounding vegetation, or for deodorising manure-heaps, &c., for which purpose it is better adapted than any other disinfecting powder, as the sulphurous acid fixes the ammonia—the most valuable constituent of manure—and makes it available for gardening and farming purposes, while chlorine and other disinfectants destroy it, and reduce the value of the manure in proportion to the extent of their action in deodorising it.

Radishes a Decoy for the American Brown Grub.—

In some parts of the United States the brown grub has this season proved very injurious to melons and cucumbers, cutting them down by dozens. The ordinary remedies, such as charcoal, coal ashes, &c., have entirely failed; but the introduction of radishes about the plants has been of great service, as the insects congregated around them; the radishes are frequently examined, and the grubs are destroyed.

NOTES AND QUESTIONS ON GARDEN DESTROYERS.

Mole Crickets.—I send herewith an insect which is a great pest in gardens in this locality, especially low-lying wet land; our gardeners call it an earth cricket. It commits great ravages amongst early potatoes. Will you kindly advise us how best to destroy it?—C. R. ROBINSON, *Teignmouth*.—[Your pest is the Mole Cricket, figured and fully described at p. 97, vol. i., of THE GARDEN. We should be glad of a few fresh specimens.]

Coal-tar a Remedy for Caterpillars.—A terrible insect is the wood-gnawing caterpillar (*Cossus*). It gets under the bark and into the wood of Elms, Willows, and Poplars, and destroys them rapidly. In some valleys where Poplar trees are cultivated to a great extent, it is a positive scourge. There is, however, a simple way of preventing the mischief; it consists in daubing the base of the young trees every two years with coal-tar. A ring of this liquid painted on each tree, will have the desired effect, as the caterpillars dread it like the plague.—P. Ercan, in "Illustration Horticole."

Stinging Insects.—The following observations in a letter we have received from a correspondent in Oporto may interest our readers:—"There is one peculiarly offensive insect here, which makes a thick web round the tops of the Pine shoots, and then eats them away inside. It is a caterpillar, and is poisonous. If it falls on one's skin (it is always tumbling off the trees) it stings. It occurred to me once that it might be utilized, like Spanish flies, for blistering, and that a tincture of caterpillar might be prepared from it, and I even made some, which seemed to act perfectly. It was tried, and for aught I know is still being used, in St. Thomas's Hospital."—W. C.

The Fly-catcher and the Leaders of Young Coniferæ.—We have a young Picea 2½ feet high here, and during last summer one of those birds called "fly-catchers," took up its quarters on the leading shoots; but it also occasionally nested on the first tier of side shoots of the current year's growth. Of this I took no particular notice, except perhaps to admire its sometimes long and trying patience in watching for its prey. This spring, however, owing to the leader and some of the other branches not starting into growth with the other parts, I was led to examine them, and I found to my dismay that they were dead, and covered with the bird's excretion. Now, I would like to know if I am right in conjecturing that the latter has been the cause of their death. Be that as it may, when next I observe this bird taking up its residence on a young conifer, I shall stick up a twig for its accommodation.—J. TAYLOR, *Muesgrynne, Whillans*.

THE INDOOR GARDEN.

A REVISION OF THE GENUS DRACÆNA.

BY DR. REGEL.

(Continued from Vol. I., p. 657).

DRACÆNA THWAITESI (RGL.)

STEM simple, shrubby, covered with leaves at the top. Leaves lanceolate, lengthened-acuminate, narrowed at the base into a channeled clasping stalk, which is sometimes 2½ inches long, with a tolerably stout midrib, striated with veins, 6 or 7 inches long exclusive of the stalk (6 to 12 inches according to Thwaites), and from 1¼ to 1½ inch broad. Scales at the lower joints apparently soon deciduous. Raceme terminal, loose, simple, scarcely 2 inches long, on an erect stalk about 1 inch long, with a fascicle of bracts at the base and a few other scattered bracts. Flowers solitary or in pairs, with small scarious bracts shorter than the pedicels. Corolla 4 or 5 inches long; tube very short; divisions erect, oblong-wedge-shaped, longer than the tube. Ceylon, in shady mountainous districts. I have seen a dried specimen.

Synonym—*Dracæna elliptica*, var. *floribus minoribus* (Thwaites).

DRACÆNA OVATA (SIMS).

Leaves elliptical acute, undulated, of a lively green, folded into five prominent rib-like nerves, and striated with veins. Lower joints of the stem covered with an herbaceous scale which appears to be persistent for a long time. Raceme nest-shaped, sub-corymbose. Divisions of the corolla oblong-wedge-shaped, of a pale red colour. In other respects like *D. nigra*, A very doubtful species. Native country unknown. It is cultivated in the gardens at Berlin (according to C. Koch) under the name of *D. spatulata*.

Synonym—*Cordylina ovata* (Fl. des Serres).

ANALYTICAL KEY TO THE SPECIES.

SECTION I.—LEAVES SESSILE.

A.—Leaves with a stout midrib, which is tolerably conspicuous on both sides of the leaf.

a.—Leaves with the margin of the same colour as the rest of the leaf.

1. *D. umbraculifera*, Jacq.—Leaves from 1 inch to 1½ inch broad, and from 2 feet to 3 feet long.

2. *D. arborea*, Lk.—Leaves from 2½ inches to 3 inches broad, and from 2 feet to 3 feet long, with slight longitudinal folds.

3. *D. angustifolia*, Roxbrg.—Leaves 1 inch broad, and from 1¼ foot to 1½ foot long.

4. *D. fruticosa*, Blume.—Leaves 2 inches broad, and from 17 inches to 20 inches long.

5. *D. fragrans*, Gawl.—Leaves from 2½ inches to 3½ inches broad, and from 1¼ foot to 2 feet long, undulated.

b.—Leaves with a red margin.

6. *D. Kochiana*, Rgl.—Leaves flattish, with a very narrow red margin, from 1 inch to 1½ inch broad, and sometimes as much as 1½ foot long.

7. *D. concinna*, H. Berol.—Leaves folded longitudinally, from 2 inches to 3 inches broad, and from 2 feet to 2¾ feet long, with a well defined red margin.

8. *D. marginata*, Lam.—Leaves from ¼ inch to ¾ inch broad, and from 1 foot to 1¼ foot long, with a well defined red margin.

B.—Leaves with a midrib, which is scarcely visible on the upper surface of the leaf, but prominently convex on the underside.

a.—Leaves concealing the internodes of the stem with their clasping bases, and having the margin of the same colour as the rest of the leaf.

9. *D. ensifolia*, Wall.—Leaves of a uniform colour, 1 to 1¼ inch broad, and from ¾ to 1½ foot long. Panicle simple.

10. *D. Saposchnikowi*, Rgl.—Leaves of a uniform colour, 1¼ to 2 inches broad, and sometimes as much as 2 feet long. Panicle very branching.

11. *D. stenophylla*, C. Koch.—Leaves green and marked with yellowish longitudinal lines, from one-half to three-fifths inch broad, and from 1 to 1¼ foot long.

b.—Leaves not concealing the internodes of the stem with their half-clasping bases.

12. *D. reflexa*, Lam.—Leaves of a uniform colour.

13. *D. cernua*, Lacy.—Leaves with a red margin.

c.—Leaves concealing the internodes of the stem with their clasping bases, and having a transparent margin.

- 14.—*D. Rumphii*, Hook. Leaves from 1 to 1½ inch broad, and from 1¼ to 1¾ feet long.
 15. *D. latifolia*, Rgl.—Leaves 2½ to 3½ inches broad, and from 1¼ to 1¾ foot long.
 C.—Leaves without a midrib.
 16. *D. Draco*, L.—Stem thick, tree-like. Leaves from 1 to 1¼ inch broad, and from 1½ to 2½ feet long.
 17. *D. salicifolia*, Göpp.—Stem slender, branching, half-shrubby. Leaves two-fifths inch broad, and from 3½ to 5½ inches long.

SECTION II.—LEAVES STALKED.

- A. Leaves narrowed into a short channeled stalk, from ½ inch to 3 inches long.
 a. Flowers in a simple raceme. Rhizome throwing up several stems.
 18. *D. sureulosa*, Lindl.
 * *—Stem single, simple or slightly branching.
 a.—Bracts scarious, shorter than the pedicels, or, less frequently, longer.
 19. *D. nigra*, H. Berol.—Racemes closely crowded together, nearly sessile. Leaves with a conspicuous midrib.
 20. *D. spicata*, Roxbrg.—Racemes loosely disposed on a stalk from 3 inches to 5 inches long; tube of the corolla, thread-like.
 21. *D. Thwaitesi*, Rgl.—Racemes loosely disposed on a stalk about an inch long; tube of the corolla, funnel-shaped, and very short.
 22. *D. ovata*, Sims.—Racemes closely crowded together into a somewhat nest-shaped cluster. Leaves ribbed longitudinally, with from five to seven prominent nerves.
 b. Bracts coloured and as long as the tube of the corolla.
 23. *D. bicolor*, Hook.
 c. Flowers in a simple panicle.
 24. *D. javanica*, Knth. Leaves acute. Panicle nearly sessile, and with patent branches.
 25. *D. terniflora*, Roxbrg.—Leaves lengthened-acuminate. Panicle with ascending branches.
 26. *D. Griffithi*, Rgl.—Leaves acuminate, in partial whorls. Panicle with reflexed branches.
 B. Leaves with a channeled stalk from 4 inches to 9 inches long.
 27. *D. Aubryana*, Bronn.
 C. Leaves with a smooth stalk, channeled on the upper side.
 28. *D. phrynoides*, Hook.

The *Dracenas* have a three-celled ovary with one-seeded cells, and roots of an orange colour. The genus is distinguished from the genus *Cordylina* by the absence of stolons.

(To be continued.)

RECENT ADDITIONS TO OUR GARDENS.

READ BY MR. T. MOORE, AT THE BIRMINGHAM CONGRESS.

LET us take, said Mr. Moore, indoor plants first, and endeavour to ascertain what has been our progress in regard to them. The more general diffusion of the majestic family of the palms—those princes of the vegetable world, is fully deserving of precedence on this occasion. I do not refer so much to the introduction of novelties amongst palms, as to the fact that palms are much more generally grown, and that the taste for them is becoming widely extended. They have hitherto been costly, and this has restricted their use, but as demand produces supply, and an abundant supply brings down prices, we may hope to see them come more and more within the reach of all classes. Novelty is not, however, wanting amongst them, for there have been introduced during the last few months some palms of the Lord Howe Islands—notably the Umbrella Palm, *Kentia Canterburyana*—which are of a highly ornamental character, and which have been freely exhibited by some of our chief new plant growers. These we may expect to become popular palms, coming as they do from a group of islands lying nearly five hundred miles outside the tropics, and being, therefore, species not likely to need a high temperature. New stove palms also abound. The plants commonly called *Crotons*—more correctly *Codiaeum*—have lately received some wonderful accessions, such as the *C. Hookeri*, *Veitchii*, multicolor, undulatum, *Johannis*, and others, imported by Messrs. Veitch; and the *C. majesticum* and *spirale*, imported by Mr. Bull. *Dracenas*, too, have been marvellously improved, witness *D. reginae*, *majestica*, *metallica*, *splendens*, *Weismannii*, *amabilis*, and others, which have issued from the two noted Chelsea establishments. In Mr. Bull's *Bertolonia superbissima*, exhibited this year for the first time, we have a real gem amongst beautiful-leaved plants, the habit being dwarf, while the broad, ribbed, deep green leaves are decorated with numerous large and innumerable small, dots of the clearest and most brilliant rose-pink. From amongst the legion of novelties among fine-foliaged plants I select one other for special mention—the *Paulinia thalictroides*, introduced by the Messrs. Veitch, a slender woody hot-house climber, whose stems are draped with leaves resembling the most exquisite of Maidenhair fronds. Amongst recent flowering indoor plants one of the most lovely, for its purity, is the Malayan *Cypripedium niveum*, with its charming waxy-white slipper-formed flowers; and the

Mexican *C. irapeanum*, with beautiful yellow flowers, exhibited by Messrs. Backhouse & Sons. Too much cannot be said in praise of such plants as *Masdevallia Lindenii*, *M. Harryana*, of which Messrs. Veitch and Rollisson show examples, *M. ignea*, and a new one recently shown from Lord Lonsborough's collection—plants which prove to be amongst the most neat-habited and manageable of the cool Orchid race; and whose flowers add to quaintness of form a surprising and almost dazzling brilliancy of colour. *Anthurium Scherzerianum*, the Flamingo plant as it has been called, has won for itself a place in all collections of any pretensions; and in fine contrast with it we now have the more recent *A. ornatum*, which is somewhat larger in growth, has white spathes surrounding spadices of delicate purple-tinted flowers, and is scarcely, if at all, inferior to it in beauty. Then we have the Bromeliaceous *Echmea Maria-reginae*, of M. Wendland, distributed by Mr. Williams—a noble plant of its class, the showy inflorescence of which is set off by the grand rosy-pink bracts which surround it; and *M. Linden's Encholirion corallinum*, another handsome species of the same order, with yellow flowers subtended by coral-red bracts, arranged so as to form a close distichous or flattened spike. Among harder indoor flowers who would, without seeing it, have believed in a Hyacinth with a flower-stem upwards of a yard high, and decorated with a score of massive pendent, pure white bells? Such, however, is the *Hyacinthus candicans*, lately introduced by Mr. Wilson Saunders from South Africa. In this connection, too—that is, amongst the ornamental indoor flowering plants, I must specially mention, as resulting from the skill of the hybridist, *Dipladenia insignis*, the finest of all the forms we yet know of this beautiful genus of hot-house climbers, the colour being of the deepest rosy-carmine, and the size, form, and texture of the flower, irreproachable. *Ixora Colei*, another gardener's triumph, is by far the finest of the white-flowered *Ixoras*, and a splendid exhibition plant, and recently won a substantial prize as the finest object in the Manchester show. Such *Begonias* as Messrs. Veitch's *B. Sedeni*, and Messrs. E. G. Henderson's *B. rubra superba*, fine hybrids of the *holviensis* strain, may be instanced as remarkable for their bold and freely-produced crimson flowers, and as affording evidence how soon the distinctive features of introduced novelties are made the stepping-stones to fresh acquisitions. From this point of view should be noted the splendid varieties of *Euceadonia* and *Plectopoma*, plants allied to *Achimenes*, raised and distributed by M. Van Houtte, but which, with all their beauty, are yet very little known.

Hardy Ferns have been enriched by the many fine varieties of *Scolopendrium*, and latterly of *Adiantum* and *Asplenium* raised by Mr. E. J. Lowe; and of *Athyrium* and *Pteris* by Mr. J. E. Mapplebeck; while amongst tender ferns the grand *Adiantums peruvianum* and *speciosum*, and the equally grand *Davallia Mooriana*—all introduced by Messrs. Veitch—are plants of the highest order of merit from the decorative point of view, and such as will always maintain a position in even the choicest collections of these charming plants.

I must pass on to outdoor plants and flowers, and here the greatest novelty that occurs to me is to be found in Mr. Jackman's race of sweet-scented spring-flowering Clematises, the well-marked fragrance of which may be compared to the combined odours of the Violet and Primrose. As an additional feature of merit in a flower which within the last few years has attained great popularity, the acquisition of fragrance in these varieties of the Clematis deserves prominent mention. I ought here to mention as the best of all hardy evergreens, and only recently brought into prominent notice, Mr. A. Waterer's *Cupressus Lawsoniana erecta viridis*, the most elegant, effective, and refined of all its race, and which has not only stood defiantly and unharmed the severest winter frosts, but passed scatheless through the terribly searching frost of last Whit-Sunday.

For conservatory and terrace decoration, and also, it is said, as a summer bedding plant, few subjects can compare for elegance with the so-called *Amarantus salicifolius*, sent out by Messrs. Veitch, and which, in its brilliant colours and fountain-like aspect, stands unique amongst decorative plants.

One of the finest of hardy perennials of recent introduction, the *Primula japonica*, for the acquisition of which we have to thank Mr. Fortune, is undoubtedly a grand plant, but it seems to have been a little overgrown this season, through being too kindly treated. Like Messrs. Veitch's *Primula cortusoides amena*, however, it bears the stamp of a sterling plant. I gladly refer to the lilies as a family fast retaining the popularity they should never have lost, since they are amongst the very finest of our old garden flowers. They are too numerous to particularise, but I cannot refrain from mentioning *L. tigrinum flore pleno* as one of the finest, while *L. Washingtonianum* is one of the most novel. It is scarcely possible to find a lily which is not worth cultivating, although by comparison some are undoubtedly much finer than others.

Amongst annuals a crimson groundsel, *Senecio pulcher*, with flower heads three inches across, introduced from Uruguay by Mr. Tyerman, is highly promising. I must further mention, as a recent plant, a little annual which, as it has been flowering at Chiswick, has been highly meritorious. I allude to Mr. Thompson's *Leptosiphon roseus*, which for some time past has been a glowing mass of rosy-tinted stars of varied shades.

In the department of fruits, we have to thank Messrs. W. Thomson, Cox, Pearson, Paul, Standish, and others, for varieties of grapes of more or less excellence or promise, the merits of which, however, not being so readily tested as those of flowers, are not so quickly or unanimously decided on. All honour to the efforts made in this direction; and when the raisers of new grapes do succeed in beating a black Hamburg or a white Muscat, there will be no lack of praise, or of more substantial rewards, in store for them. In the meantime, gardeners have to find out for

what purposes the several varieties already obtained are best adapted, and the peculiarities of treatment each requires. I may briefly state that, so far as my observation goes, the general verdict has been in favour of the Madresfield Court Muscat, as likely to prove the best amongst the newer sorts.

Figs are receiving more attention than formerly—perhaps owing to the excellent examples of pot culture produced at Chiswick, some examples of which Mr. Barron has shown us at the Society's provincial shows of former years. Amongst novelties of real excellence in this direction I may note the Royal Vineyard of Messrs. Lee, and the Negro Largo, which Mr. Fleming, who imported it, tells me is the finest black fig in cultivation.

Thanks to the Messrs. Rivers, we have gained many new peaches and nectarines of ascertained merit, but, as in the case of grapes, time is required to bring out their qualities more fully. It would appear that Early Beatrice, Early Rivers, and Early Louise peaches are specially valuable for their earliness; whilst of the new nectarines, the Victoria and the Pine-apple are proved to be valuable acquisitions on the score of quality. A still more recent batch of both peaches and nectarines awaits the judgment of those upon whom it devolves, in our great garden establishments, to keep up a constant supply of good dessert fruit.

I must pass over the other fruits, just to say a word respecting new vegetables, of which the name is legion. It may be well to state that the Royal Horticultural Society has now in hand, at Chiswick, an experimental trial of peas, at which, so far as the earlier sorts are concerned, the following results have already been arrived at, after due examination by the fruit and vegetable committee:—Harbinger has been certificated as being the earliest variety; superlative for its enormous pods, the largest of all the early sorts; and Dr. Hogg, as a fine early wrinkled green marrow. All these have been raised by Mr. Laxton.

Rapid growth of Tree Ferns.—These plants, so precious for the embellishment of large stoves and winter gardens, are generally supposed to be many years old before they produce a good effect, and for the same reason to be only within the reach of the richest amateurs. In the Birmingham Botanic Garden are fine specimens of such giant ferns as *Cibotium regale* and *Alsophila contaminans*, which teach a lesson. Some of these Mexican ferns measure from twelve to twenty feet through, and have fronds more than twelve feet long. Yet, four years ago, they were all small plants in six-inch pots. This is good news for those who have large conservatories, and think it difficult to grace them with such noble ornaments. With good treatment, as is shown by Mr. Latham, they may be grown almost as quickly as a specimen *Pelargonium*.

Indoor Evergreen Walls of Houses.—To turn everything to account and to make every inch, even the back walls of houses under our charge, enjoyable and profitable is one of the duties of every gardener. That this may be done more easily and effectively than by the usual system of brackets I am confident, from the luxuriant appearance of the back wall of a plant stove in these gardens. The wall in question is covered with strong wire about four inches apart and the same distance from the wall; the space next the latter is filled with turfy peat, &c., and in this are large masses of fine foliaged *Begonias*; the Stag's-horn fern, and other plants, also luxuriate in this situation, and the groundwork is densely covered with *Adiantums*, *Pteris*, *Lycopods*, *Panicums*, &c. Fern fronds, always in request, may here be gathered in any quantity; and beyond frequent syringing these walls are scarcely any trouble; in fact, by pegging in the *Lycopods* and filling up any cracks in the soil with a little fresh material, they will last for a number of years.—*JAMES GROOM Henham, Suffolk.*

Silver Sand and Peat in Scotland.—A short time ago I observed an inquiry as to where these could be procured in Scotland. I feel great pleasure in stating that a silver sand, said to be the best in the three kingdoms, may be had in Scotland, at a place called Gartverrie, near Coatbridge. The proprietor of the quarries is Mr. William Lang. Gardeners and others requiring the best, should state "the sand to be burned as for glass-works" in their order. After burning a slight tap knocks it to pieces, and the result is a sand with not a particle of dirt or refuse in it, consisting of the purest silica. A second quality sand is also sold, not burned, but as it comes from the rock. This is largely used by nurserymen for azaleas, camellias, and the finest New Holland plants. It is cheaper than the first, and very serviceable. A gardener here, who was at one time foreman in the New Holland House at Kew, uses the first quality regularly, and says it is much superior to anything he could get about London. There is also a thin bed of peat on the top of this silver-sand rock, finely permeated with the sand, and makes a most excellent staple for azaleas and such like plants, for which it is also largely used by nurserymen. To insure a good sample, however, it would be preferable to take a run over and pick it. I cannot, however, say anything as to its suitability for orchids, never having tried it in that way.—*WILLIAM WRIGHT, Coatbridge.*

GARDEN IN THE HOUSE.

THE FORM AND FURNISHING OF VASES.

PERMIT me to thank "W." and "W. T." for their admirable answers (see p. 578, vol. i.). "W.'s" three general principles of above, below, and on a level with the eye are admirable; and if generally noted and applied would save a world of disappointment. Full half of cut flowers are so placed in regard to the line of vision that their form and character are wholly lost to sight, though still to memory dear. The latter makes such mistakes the more provoking. We remember how nature exhibits their distinctive charms; we see how art hides them by placing the flowers too high or too low, or crowding others over them. I like "W. T.'s" vases, so much as to ask for more. Perhaps hardly a greater service could be rendered to practical gardeners at the present day than giving in these pages descriptions of various styles of vase-dressing. It would add to their value were the height of the vases, the diameter of the mouths, and their general forms indicated. Criticism might also be invited upon the examples given, and every one be considered at liberty to suggest improvements by way of additions or subtractions—in one word, to do it better. As an illustration, I would take the *Gloxinia* and the *Ivy* out of "W. T.'s" vases, and put in a spray of scarlet *Salvia* and a twining branchlet of *Passiflora kermesina* in their stead. Doubtless contrasts of form are allowable as well as of colour; but such contrasts have been carried to great excess; and more variety would result from the giving of each vase a specific character, than from the filling of all with the wholesale mixtures now so common. Perhaps the greatest pleasure would be derived from arranging each vase on the principle of harmony of form and contrast of colour. Then each vase as seen in succession would call up new sensations of pleasure, instead of too often, as now, suggesting another of the same, but worse or better, as the case may be.—*D. T. F.*

Strawberries for Hanging Baskets.—Little bushes of alpine are really pretty plants for house culture, and in a moderately low temperature will produce fruit continuously. I have taken up and potted a good number of plants of both the red and white alpine, and expect that their fruit and flowers will, during the winter, amply repay the little care required in their culture. I should think that those who take so much delight in window plants would try the alpine strawberries. The varieties that produce runners are very pretty when grown in hanging baskets, for the long pendent stems produce a bunch of leaves, flowers, and fruit at every joint, and I am sure the whole appearance of the plants is equal, if not superior to Aaron's beard (*Saxifraga sarmentosa*), *Tradescantia*, and scores of similar plants that are generally cultivated for such purposes.—*W.*

A Floral Ornament for the Drawing-Room.—Last August a lady friend of mine gathered a handful of the world-renowned flowers of forget-me-not, *Myosotis palustris*, and to preserve them for as long a period as possible they were put in a large soap-plate filled with rain-water. The flowers were placed near the window, so as to enjoy the advantages resulting from an abundance of light and air, and the water was replenished when needful. In a surprisingly short space of time—three weeks, I believe—white thread-like roots were emitted from the portion of the flower-stalks in the water, and they ultimately formed a thick network over the plate. The flowers remained quite fresh, excepting a few of the most advanced when gathered, and, as soon as the roots began to run in the water, the buds began to expand, to take the place of those which faded, and up to the middle of November the bouquet—if it may be so called—was a dense mass of flowers, and a more beautiful or chaste ornament for the indoor apartment cannot be imagined.—*Thomas W. Trussler, in "Gardeners' Magazine."*

Gumming Zonal Pelargonium Blooms.—This is often done in Covent Garden Market. Gum is dabbed into the central parts of the blooms of cut flowers with a small brush. By this means the petals are certainly prevented from falling off so soon as they otherwise would do; but the practice is nevertheless a barbarous one. After being dabbed they are spread out on a piece of paper for a few minutes to dry.—*W. F.*

FLOWERS OF LOVELINESS.

O thou sweet Rose in virgin bloom
Thou art a thing to see,
Like *Bella graecæ* in choice costume,
But far the fairer she!

How fair thou art thou canst not tell,
Thou silent senseless Rose;
But she knows how she looks full well:
And that is all she knows.

—*Punch.*

THE GARDENS OF THE VILLA ALBANI, ROME.

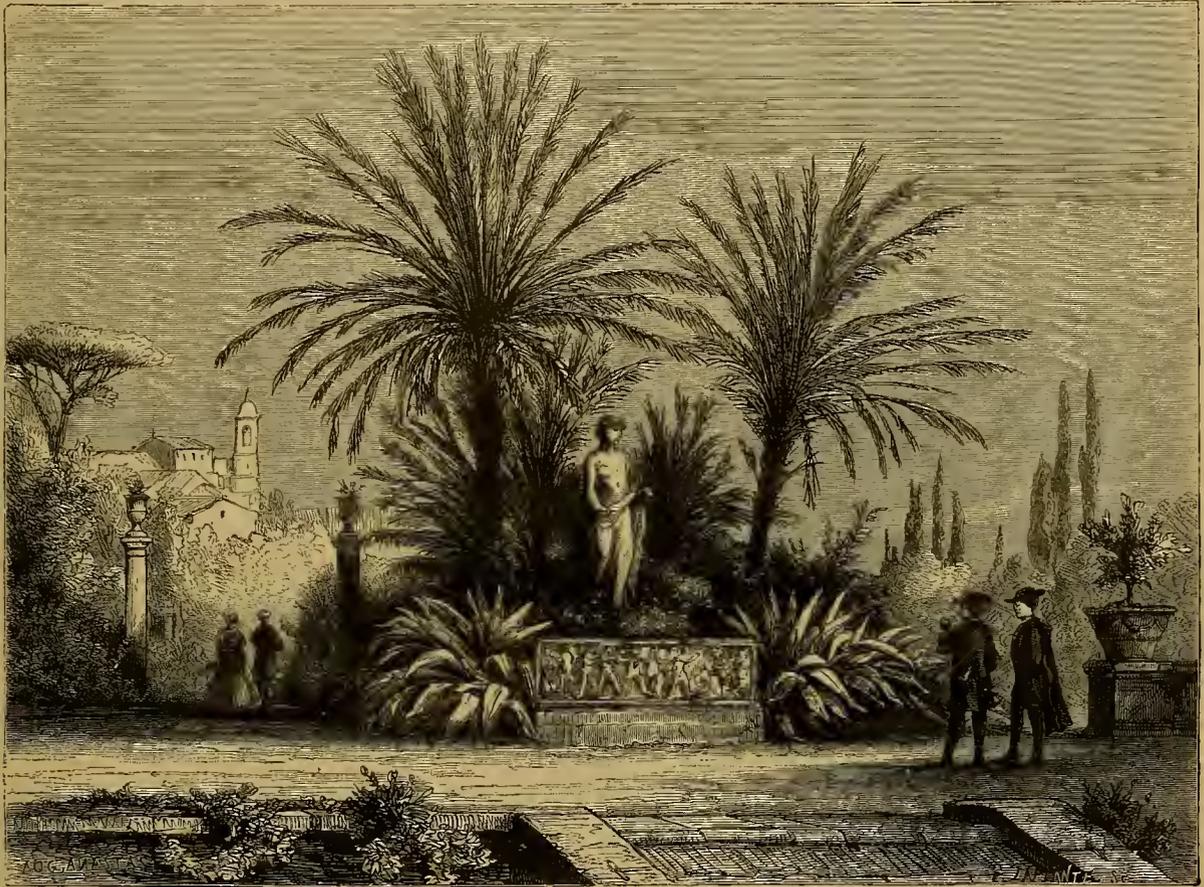
BY NOEL HUMPHREYS.

Among the remarkable private gardens at Rome, that known as the Villa Albani ranks among the most interesting. One of its chief attractions is the fine group of palms, which English tourists, unacquainted with tropical scenery, always look upon with strongly awakened curiosity. We, of the frigid north, as we travel southward, generally make Italy our pleasant pathway in that direction; but it is not till we reach the soft climate of Rome that we witness the feathery foliage of the palm growing in the open air as freely as in the oases of the great African desert, or among the jungles of India, or, as when it forms the chief and most salient point of interest, in the coral islands of intertropical seas.

The aspect of the palm is one of our earliest associations with the graceful glories of tropical vegetation. We first

branch-like leaves. One spot, if my memory serves me aright, is just within the ancient doorway of the convent of St. Onofrio; and another is the Villa Albani; both anxiously sought by the young northern traveller, sketch-book in hand, when the graceful trees have often to submit to many an awkward travesty from clumsy or unpractised pencils.

The Villa Albani is also celebrated for its interesting relics of antique statuary, among which are several well-known masterpieces of antiquity of world-wide celebrity. It was laid out as now seen, and decorated with its treasures of statuary, during the last century, by Cardinal Alessandro Albani, whose well-known *diletantism* found a congenial outlet in the decoration of the gardens of his noble suburban residence with the rarest objects of antique art, collected from all parts of Italy. The accomplished Cardinal also distinguished himself diplomatically during his embassy to the Emperor of Germany,



The Gardens of the Villa Albani, Rome.

become intimate with its solitary, towering stem, and the majestic drooping of its singularly beautiful foliage, in the Bible-pictures of our childhood; and afterwards in those books of travels which form the fascination of early youth, from the voyages of Captain Cook to the later adventures of modern explorers in India, in the Holy Land, and in Egypt. But, except in the confined space of hothouses, and under the artificial protection of glass, few have ever seen the palm in a living and growing state. When, therefore, in Rome, during our first Continental tour, before adventuring to Palestine, Egypt, or India, we find the palm growing freely in the open air in some of the gardens of that city, it seems like the realisation of a dream—like the transformation of some Pygmalion statue to the breathing reality of actual life.

It is only, however, in certain favoured spots in Rome that the palm deigns to display the sweeping glory of its long, feathery,

and as an accomplished bibliographer during his curatorship of the noble library of the Vatican. But it is, after all, by the classical embellishment of his elegant gardens and palace that he is best remembered. He sought to realise a kind of Ciceronian elegance in his abode and its surroundings, seeking to emulate, as he added feature after feature of classic elegance to his gardens and his house, what he conceived to be an embodied reproduction of the Villa of Hadrian, of Cicero's retreat at Tusculum, and Pliny's charming country abode, of which, in his garrulous way, the Roman naturalist has left us so many charming particularities.

But, after all, the charming Villa Albani does not perhaps approach more closely the ancient models of which it was supposed to be a revival than do many other modern Roman villas, though it is undoubtedly one of the most beautiful and interesting. The above engraving will convey a good idea

of the general aspect—of its ancient sarcophagi, wrought about with intricate alto-relievi, flanked and half concealed by great clumps of agaves, growing with tropical luxuriance—of its antique statues of matchless beauty, telling out their snowy outlines against masses of dark evergreen foliage—of its cypresses shooting their tapering spires of foliage into the deep blue Italian sky, and contrasting picturesquely with the tufted heads of the flat-topped stone pines, and most of all, by the artistic treatment of the celebrated group of palms.

THE BIRMINGHAM HORTICULTURAL SHOW.

GARDEN FURNITURE.

VASES, PEDESTALS, FERN-STANDS, FLOWER-BOXES, ETC., IN TERRA, STONWARE, IRON, ETC.

MR. JOHN MATTHEWS, of Weston-super-Mare, exhibited a very fine collection of terra-cotta work, made from the clay near Weston, which he (Mr. Matthews) considers the best in England for plastic purposes. Among the most remarkable of the products of Mr. Matthew's works are the gigantic flower-pots (of the usual shape), thirty inches in diameter, and perfectly unadorned by any kind of ornament; but so finely turned, and baked without the slightest warping, that they are perfect models of the art of simple pottery. These pots only cost £1 each, and in graduated smaller sizes are proportionately lower in price. They are warranted not to become green while in use, and are certainly very fine specimens of the simplest form of ceramic art. The pedestals, at 10s. each, are very decorative, as are the ornamental vases at equally low prices. Fern-stands, with bold basket-pattern sides, and handsome handles (which have a good effect) for lifting them about lawns, are remarkably cheap, only 3s. for a stand thirteen inches in diameter. Six shillings is the price of much larger ones. Little baskets of flowers, of terra-cotta, are made by Mr. Matthews, which though mere playthings, are very curious and beautiful, and serve to show the wonderful plasticity of the Somersetshire clay. Very pretty bed-edgings are to be had at the rate of three farthings, and five farthings, per foot run.

Mr. William Hudspeth, of the South Tyne Works, exhibited a great variety of stoneware, especially his simulated tree stumps, with truncated hollow branches, out of which growing ferns make a picturesque appearance. The tints of this stoneware are very artistic; the rough surface is beautifully modelled, and the hard semi-glaze makes the work perfectly imperishable. The patterns which Mr. Hudspeth calls the "Merlin Oak" and the "Balmoral" are very picturesque and attractive; as are some garden chairs of the same material and analogous design, namely gnarled trunk forms. Fern-stands and rustic vases are also produced, some of them very excellent in design. But there are other devices produced at the South Tyne Works which I am not able to praise. I mean those masses of branchwork upon which an eagle or an owl is perched, having a great aperture in the middle of the back, out of which ferns or other plants are intended to sprout. This sort of thing seems to me the result of very depraved taste; yet it is but justice to Mr. Hudspeth to admit that many of his customers entirely differed from me, and that all his flower-pot eagles and flower-pot owls were marked "sold," and I have reason to know that they had actually found ready purchasers. There was a remarkable piece of rustic fountain-work parts of which were very striking in design, especially in the lower portion, the base of which was formed of gnarled and twisted roots uncommonly well designed. That which struck me most in this handsome rustic fountain, from six to seven feet high, was that the price was only five guineas.

Mr. William Hunt, of Leicester, exhibited a number of very good designs of his remarkably handsome vases, stands, tazzas, &c., formed of massive cast-iron ribs, of very ornamental character. The interstices between the ribs are filled with wirework, through which moss and other small creeping plants show themselves. The advantages of this system of garden-vase structure does not merely consist in its elegance, lightness, and novelty, but in the superior drainage afforded to the plants grown in them.

Messrs. Sankey, of Bulwell Pottery, Notts, exhibited common flower pots, of excellent quality, which can be delivered all over England at the local prices.

Messrs. Doulton & Co. were, as a matter of course, among the most prominent exhibitors. They showed an excellent collection of garden furniture in terra-cotta in all its branches; but what rendered the exhibition less pleasing and instructive was the absence of marked prices on the different articles, so that a visitor was unable to judge, without the irksome trouble of inquiring, one after another, whether the handsome objects were within the limits of his means or not. I took the trouble of inquiring the price of a handsome

mignonette box, three feet long, for which fourteen shillings was the price demanded—a very moderate charge, considering the excellence and elaboration of the design. The Messrs. Doulton's priced catalogue, which there was not time to refer to on the ground, contains good illustrations of most of their leading products.

Mr. Fielding Moore, of Spenny Hill Works, Leicester, exhibited a number of vases, tazzas, pedestals, &c., which I considered very remarkable for the chasteness of their forms, and the delicate character of their small geometrical ornaments, running round the objects, above, under, and between the well-designed mouldings. These chaste and sparingly-introduced borderings are in the style of those found in ancient British and Romano-British pottery. Not the least attractive feature of this class of work is its cheapness. One grand central vase, with an appropriate pedestal, together some five feet high, was marked £1 18s.; and I was pleased to see it sold to an admiring purchaser as I stood by, along with two others of somewhat smaller dimensions, the whole group, as fine a one as could be procured for garden purposes, for only £5. Mr. Moore also manufactures chastely decorated flower-pots of all the ordinary sizes for a trifle less than double the price of the common, unsightly flower-pots used in the wholesale plant trade.

Among the handsomest solid cast-iron vases coloured white in imitation of marble or stone, were those of the Messrs. Handyside & Co. These gentlemen profess to issue a splendidly illustrated catalogue of their productions, which, however, does them no sort of justice. They produce a noble vase, of tall and slender proportions, excessively graceful in its main outline, which is enriched with finely modelled copies of Thorwaldsen's famous groups, "Morning" and "Night." This is a very grand work; but the woodcut in the catalogue, to my mind, conveys no adequate idea of its grandeur. Some of the fountains exhibited by this firm are of large proportions and excellent design. The largest and most important of these was sold on the ground; and I hope many other objects in the collection.

Among the most interesting of the garden furniture in terra-cotta was Mr. Looker's ground viney, which is not only imperishable from the nature of its material, but excellently planned in regard to ventilation. It is said by its inventor, and not without tolerably good reason, to be by far the cheapest and most perfect combination of earthenware and glass for protecting and forcing purposes ever brought before the public. It secures complete ventilation at the ridge, and is easily regulated, without touching or disturbing the glass. I believe that this complete and regulated method of ventilation will greatly facilitate the culture of vines near the ground, which has hitherto been far less successful than it might have been, in consequence of defective ventilation to expel the accumulation of damp vapour.

Messrs. Hebeck & Sons, of Birmingham, exhibited some very handsome stone-coloured vases, with the bas-reliefs in white, which produce a cameo-like effect. Some of them are very effectively bronzed.

ORNAMENTAL GARDEN WIREWORK.

Messrs. Baker & Co., of Chester Street, Aston Road, Birmingham, exhibited by far the largest, and in some respects the best collection of works of this class, and the prices marked on the articles were extremely moderate; every article was priced in conspicuous figures, a principle which led to many sales on the ground, as many of the suspended baskets, one especially with sockets for four lights (24s.), were remarkably cheap. The great rose temple, a structure of very good outline and pretty detail would, as the supporting framework for an elegant bower formed of choice kinds of climbing roses, form a very attractive central object in a rosary; but I should wish to have the wirework, pretty as it is, as much covered as possible with the more natural tracery of rose branches. In concluding my remarks upon this remarkable exhibition of garden wirework, I would recommend Mr. Baker to abstain from such profuse bespatterings with paint and gilding. Though it may attract a certain class of purchasers, I am quite sure that it tends to lower and vitiate taste where it should be the aim of important manufacturers like Mr. Baker to elevate and purify it.

Mr. Walter Fox, of 12, High Holborn, had a small but pretty collection of garden wirework, which was well worthy of examination; as had also Messrs. Ewart & Sons, of Euston Road, remarkable for their moderate price. But the only collection that could for a moment vie with that of Mr. Baker, was exhibited by Mr. Thomas, of Edgware Road, who made a grand display. His "Alexandra Rose Temple" is a very pretty structure; not quite on so large a scale as the similar work exhibited by Mr. Baker, but in some respects of preferable design. The "Temple" is, however, much disfigured and vulgarised by the introduction, at the top of the main supports, and at the apex, of mirrored globes, the top look like great quicksilver pills, these pills being surmounted by gold spikes of equally objectionable and inappropriate character. Tawdry

appendages of this sort should be entirely confined to rose temples intended for tea or beer gardens, and not be allowed to flout their meretricious gaudiness in a public exhibition intended to elevate the public taste. I was happy to observe that Mr. Thomas had many garden elegancies to show us which were entirely free from the blemishes just alluded to, and which were in every way worthy of one of the leading manufacturers in this branch of garden furniture.

H. N. H.

THE FRUIT GARDEN.

THE CURRANT TOMATO.

LOVERS of Tomatoes, and of garden curiosities generally, will be likely to appreciate this distinct kind. It may, like other varieties, be eaten or used in cookery, and it may also be used among cut flowers in vases, &c. It is, too, an agreeable object as a pot plant.



The Currant Tomato.

It is, of course, as easily cultivated as the common kinds. It is much used at Floors Castle, and is highly praised by Mr. Harry Knight, the able gardener there. It is much admired in America, and is figured in the *Agriculturist*.

KEEPING FRUITS.

THE following rules for keeping fruit are from the proceedings of the Royal Horticultural Society:—1. As the flavour of fruit is so easily affected by heterogeneous odours, it is highly desirable that apple and pear rooms should be distinct. 2. The walls and the floor should be annually washed with a solution of quicklime. 3. The room should be perfectly dry, kept at as uniform a temperature as practicable, and be well ventilated, but there should not be a through draught. 4. The utmost care should be taken in gathering the fruit, which should be handled as little as possible. 5. For present use, the fruit should be well ripened; but if for long keeping, it is better, especially with pears, that it should not have arrived at complete maturity. This point, however, requires considerable judgment. 6. No imperfect fruit should be stored with that which is sound, and every more or less decayed specimen should be immediately removed. 7. If placed on shelves, the fruit should not lie more than two deep, and no straw should be used. 8. Where especially clear and beautiful specimens are wanted, they may be packed carefully in dry bran, or in layers of perfectly dry cotton wool, either in closed boxes or in large garden pots. Scutless sawdust will answer the same purpose, but pine sawdust is apt to communicate an unpleasant taste. 9. With care, early apples may be kept till Christmas; while many kinds may be preserved in perfection to a second year.

SUMMER PRUNING OF WALL TREES.

ONE of the most important processes of summer fruit gardening is that relating to the management of "breast wood," as it is called—that is, the young shoots made on the wood of last year, or from spurs. To prevent confusion, it is better not to include in this term leading shoots—those made on the extremities of the growing wood—that are needed to enlarge the size of the tree or to fill up vacant spaces on the walls. These, when of the usual strength, are merely to be tied or nailed in as they grow, to prevent their being injured or broken by winds or rains. When unusually strong, and several branches are needed to occupy the space quickly, it is a good plan to stop these leaders as soon as they have formed from four to six leaves. By pinching out the top several moderate-sized, well-ripened shoots may be obtained, in lieu of one rank branch, that neither ripens nor grows to any useful purpose. Breast wood that is needed for filling up space may be treated in the same way as leaders, moderate shoots being simply carefully attached to the wall or espalier, and strong ones pinched back to force a multiplication of medium growths. Peaches, nectarines, plums, Morello, and it may be other cherries, will have some of their best breast wood laid in thus, and treated in all respects as leaders. The great point in the summer management of all these trees is to provide a succession of bearing wood for next year's crop. So far, and with a view to the formation and furnishing of the tree with fruit-bearing wood in the future, the treatment of breast wood is a far-seeing, selective process, bearing close relation to winter pruning. But much breast wood lies outside of these structural lines. Myriads of shoots burst into branchlets all over the surface of trees. What shall we do with them? A good many answers have been given to this question. It is said that among a multitude of counsellors there is wisdom; but it is equally true that amid a variety of counsel there is uncertainty and confusion. Some say, stop breast wood not at all; others, stop many times, and many, never stop but once. A good deal depends upon the variety, the character of the trees, strong or weak, &c., and the style of training adopted. Peaches and nectarines, for instance, are treated differently from plums and apricots; Morello cherries, from Maydukes or White Hearts; and apples and pears, again, somewhat differently from other fruits. In general the treatment of breast wood on peaches, nectarines, and Morello cherries consists in laying in as much good young wood as room can fairly be found for it, the excess being cut off as useless. Spurs are neither useful nor desirable on such trees. Apricots, plums, and cherries, again, are treated on a sort of hybrid or half-way plan between these and apples and pears.

Breast wood is laid in to fill up blanks, and to provide a succession of fruit-bearing wood. But, in addition to this, the breast wood removed should be cut back to form fruit-bearing spurs at the base. If the shortening back of the breast wood has been done at the right time and in the proper manner, the buds in the axils of these leaves will be all developed into fruit buds before the season of growth is ended, and next year each of these spurs will be developed into a clustering nest full of young fruits. With apples and pears all the breast wood is thus spurred in. The object of this interference with the breast wood of fruit trees is twofold—the admission of more light and warmth to the fruit and leaves left, and the transformation of the wood buds at the base of the breast wood into fruit buds. The practical question, then, is narrowed to this: Which of the modes of stopping is the likeliest to secure these objects? Or should we stop at all? Against not stopping, the shade of the branches is a strong objection; and if the top is bent or broken down, the shadow becomes more dense alike over fruit and leaves. On this ground the plan of bending or breaking down the shoots is objectionable, though the check thus given is mostly sufficient to promote the change of wood into fruit buds at the base of the broken shoot. Trees, also, that have once acquired a thoroughly fruitful habit, or that have been weakened by excessive fruit-bearing, will need no stopping of breast wood to induce greater fertility, and will be strengthened by leaving all growths made alone. But these are the exceptions, and as a rule those who do not stop breast wood, bend or break it down, for the reasons given. The untidiness of the plan is another objection against it, and it is one that I cannot recommend to your readers, as few things look more slovenly than half-broken branches dangling against the wall.

D. T. FISH.

STRAWBERRY FORCING IN SURREY.

AMONG representative industries is that of forcing strawberries; and we have just paid a visit to Mr. Dew's establishment at Ham, where he has successfully carried on this industry for these last forty years. The long glass-houses filled with rows of pots, each of the latter containing a single plant loaded with luscious ripe fruit, hanging in rich clusters beneath the dark green leaves, is a beautiful sight; the

aroma is simply delicious, indeed, at times, almost overpowering. Here we have this queen of fruits without the only drawback that it is ever possible to attribute to it—the growing so close to the earth, which often gives, in rainy weather, an unmistakable grittiness to the berries. The forced strawberry is perfection; it loses none of its natural good qualities by being grown under glass, and invites you irresistibly to eat it by its tempting appearance. This season has proved an excellent one in every way for this particular industry; the fruit is large and well flavoured, and the demand so great that three times the quantity sent to market would have met a ready sale; this, considering the high price at which forced strawberries are necessarily sold to repay the great expenses of cultivation and leave a profit, speaks well for the wealth of the nation. Even a very short time ago Sir Charles Napier was fetching eight shillings a pound, wholesale. The 10th of last March was the day on which the gathering of ripe fruit commenced, and it is still being daily picked and sent to market. To supply the tables of the rich with this delicacy, the work to ensure next year's crop has already commenced, and men and horses are busily engaged carting the fuel which is to protect the plants from next winter's frosts. To take a delight in eating strawberries, which, when they first arrive in the market, average a shilling each, may appear like eating money; but directly we look below the surface, we find how very beneficial to the community at large are the luxuries indulged in by the more wealthy. At this present season the number of persons employed in preparing for the cultivation of next year's fruit, makes plenty in many homes; indeed, Ham Street, as the road is called leading from Ham Common to Mr. Dew's, seems to be a village of gardeners, for the greater number of inhabitants find at one season or the other employment in his grounds. Those who are fortunate enough to be able to afford forced strawberries should this year make much of them, for we fear the outdoor crop will prove but scanty; indeed, Mr. Dew told us it has been a bad season with almost all open-air crops: asparagus has not yielded one-quarter of the usual quantity; gooseberries and currants, which at the beginning of April promised a heavy return, are much injured by the severe frosts we had in the spring; apples are almost all affected with maggot, and pears alone, out of all the outdoor fruits, promise anything like a remunerative crop. Market gardening in seasons like the present must indeed be an uncertain business.

Only the very strongest and finest plants are selected for being forced, and, as the season advances, Mr. Dew's gardens begin to resemble the ancient garden of Maréchal de Biron, who flanked his walks with nine thousand pots of asters, only the former flanks his garden walks with never less than twenty thousand pots of strawberry plants, and during the summer their dark shining foliage affords a pleasing contrast to the mass of brilliant flowers and bright variegated leaves of the bedding-out plants in the borders. No sooner do shortening days and cold weather begin than all the strawberry plants are placed in frames, and covered carefully at night; from these quarters they are shifted to the forcing-houses at the beginning of December; fires are lighted, frosts jealously excluded, and the onerous work of forcing begins. We wonder if those who eat these forced fruits ever think of the months of care and unremitting labour involved in producing them. While they are enjoying Christmas festivities, or reclining on their downy couch, the gardener is hard at work. The plants having been safely housed, and the fires lit, unceasing care is required to keep the temperature even, and during the long wet or cold frosty nights of winter the fires requires continual care. About every two hours the man in charge must go his rounds and see that all is well; the slightest carelessness may involve a great loss, and fifty pounds' worth of strawberries has been lost in one night through negligence. When the truss, or head of flowers appears, and during the whole time of growth, until the fruit begins to colour, the plants are copiously watered overhead with clear water. The fruit for market is begun to be gathered at four o'clock in the morning, and before the end of the season many tons have been disposed of.—*Knife and Fork.*

THE COLOUR OF GRAPES.

COLOUR is sure to be found in conjunction with high flavour and other good qualities, if the grapes are ripe; for it must be borne in mind that black grapes get black before they are fully ripe. There seems to be no doubt, either, that high finish is a sure sign of vigour in the vine; for that deep black colour and purple bloom is never, as far as my experience goes, found on weakly vines, or in conjunction with a too heavy crop of fruit. I have seen Hamburg grapes ripe, yet nearly green, simply through allowing the vines to carry an excessive crop. Two or three years ago I saw a house of grapes, Hamburgs, belonging to an amateur, in which there was not one bunch that had even got as red as a grizzly Frontignan, and many of the bunches

had scarcely a tinge of colour about them at all, but remained green almost to the last. The berries tasted sweet, but that was the highest praise that could be given them—globules of sugar and water, for they could not be called fleshy. Considering the strength of the vines, the crop was, however, the heaviest I ever saw. Every bunch had been allowed to remain, two and three on a shoot, and every grape-grower knows what that means. The berries had been thinned to some extent, but that was all. Great stress is laid by many upon light and air as colouring agents, and I certainly do not undervalue their importance in this respect; but the most thorough ventilation and exposure just when the grapes begin to colour, as commonly practised, is of little avail if other matters have been neglected. Plenty of light and air, acting upon the foliage, without doubt promote a vigorous constitution in the plant, and indirectly materially assist the colouring process, but the mere action of either upon the fruit itself seems to be very unimportant indeed; otherwise, in fine and bright seasons we might expect the best-finished crops, but such is not by any means the case. Black grapes ripened in January are often quite as highly coloured as those ripened in summer and autumn. In spite of the exceptionally dull weather we have had this season so far, our early grapes, on both pot and permanent vines, have coloured exceedingly well, and better than they have done on more favourable occasions. Light has certainly been deficient during the past spring, and ventilation necessarily restricted. Again, varieties differ greatly in regard to their colouring power, so to speak. The black Hamburg is susceptible of the deepest black and the densest bloom under favourable conditions; but it is oftener seen only red, which has encouraged a belief that there is a red Hamburg, though in all probability no such variety exists. We have at least often seen "red" Hamburgs turn black under altered circumstances. The Muscat Hamburg is another grape which, among other bad qualities, has that of colouring indifferently. Mrs. Pince, too, frequently gets only red. I have this grape here on its own roots, and grafted upon the Alicante and on the Lady Downe's. On the first it is simply bad as a setter and in colour. On the Alicante the bunches are invariably magnificent, except in colour, though better in this respect than on its own roots; but often reddish when the grapes on the Alicante limb of the same vine are quite black. On the Lady Downe's stock the bunches are smaller, and more cylindrical; but they always finish best and keep longest. On its own roots it has a high and delicious Muscat flavour, but it is less piquant on the other stocks. Mrs. Pince is, however, most erratic in this respect, for we have tested it at other places and on other stocks, and failed to detect the slightest Muscat flavour about it. West's St. Peter is one of the best to colour, and takes on a singularly beautiful metallic lustre when well finished that no other grape does. The Royal Ascot would appear to be a favourite in this respect also. Barbarossa, in some soils and situations, is a grape which finishes exceedingly well, taking on the most extraordinary bloom we ever saw. Among white grapes perfect finish is even more uncommon than among the blacks. Taking the Muscat of Alexandria as the type of this section, how seldom do we see it of that deep yet transparent amber colour, which indicates perfection and high flavour? Buckland's Sweetwater grape is one that, as a rule, finishes well, and has a very taking colour when quite ripe. That magnificent grape, the Golden Champion, is certainly worthy of its name, but for the constitutional speck which affects the berries when just about ripe. I have had it, however, and seen it on several occasions, without blemish. My experience is that it is a grape which requires time and a somewhat dry atmosphere to finish it properly. It is at least a month later than the black Hamburg, and it will not bear hurrying. By far the best stock for it is the Muscat of Alexandria. Upon the whole, we are as yet in the dark to a great extent concerning the colour of both fruits and flowers. The directly operating agents in its production are a mystery, but it is a well-ascertained fact that the general health of the subject has much to do with the intensity or brilliancy of the hue, whatever it may be; and this should be constantly kept in mind by the grape-grower who would wish to secure a good sample; while he must not forget that his prospects, however fair at the commencement, may be blighted at the last by having too heavy a crop on the vines, or by subjecting them to a high and hurrying temperature, which alone is sure to impair both weight or colour, and, I should add, flavour.

J. S.

Rust on Grapes.—No one should thin Grapes without the head being securely wrapped with a clean handkerchief, to keep the hair from coming in contact with the berries. As for fingering or handling, by all means avoid it; a tapering piece of wood about the thickness of a penholder will suffice to hold or turn the bunch about in any required direction. I admit that excessive treatment in any particular way may produce rust, but it may, as a rule, be attributed to the causes put forward by Mr. Edward Jackson (see p. 682). In thinning Grapes it is astonishing the difference produced on them by different operators.—THOMAS J. CAPARN, *Newark-on-Trent.*

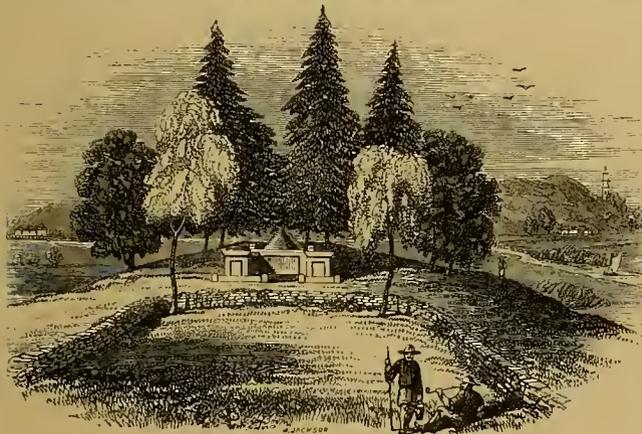
THE ARBORETUM.

EFFECT OF THE PAST WINTER ON EVERGREENS IN AMERICA.

THE unusual loss of evergreens noticed by Mr. Sargent in *THE GARDEN* of June 5th, has been quite general throughout the Northern, Middle, and Western States; particularly where little or no snow fell during the winter. In this respect the season was a somewhat remarkable one. The frosts, in consequence, were particularly severe, very few of the varieties of our native and hardy foreign evergreens escaping, except the Austrian pine, which seems to have suffered but little, owing perhaps to its less fibrous and more penetrating roots. The Central Park, New York, and Prospect Park, Brooklyn, have both suffered severely, taking into account the numbers planted; of course, the more tender varieties suffered most. Recent inquiries into the condition of the stock in many of our largest nurseries in different parts of the country, correspond with the general experience in the two parks just named. In the latter part of February, an agreeable change of weather for a few days gave a very encouraging appearance to vegetation, but as late as the first week in March we experienced the severest frost of the season, which, added to the want of moisture at the time, due to the absence of snow and the drying winds peculiar to that month, seems to have exhausted all remaining vitality, and to have completely destroyed the recuperative powers of those plants, which the advent of fine weather seemed to encourage.—JOHN Y. CULYER, *Chief Engineer, Brooklyn Park.*

THE FUNERAL CYPRESS AT A CHINESE TOMB.

THE accompanying little sketch (after Fortune) of the Funeral Cypress, as employed by the Chinese gives a better idea of the habit of the tree than the woodcut we gave last week. It is to be regretted that so graceful a tree is not hardy everywhere with us. Varieties



Chinese Tomb (after Fortune).

of some of our hardiest pines with a weeping habit are greatly to be desired, and we trust that in time many such may be detected and increased by our nurserymen. The few we have already are far too little known and employed.

HARDY TREES AND SHRUBS.

BY GEORGE GORDON, A.L.S.

THE WOLGA CALOPHACA (CALOPHACA WOLGARICA).

This forms a pretty, slender, spreading, deciduous shrub, from two to three feet high when on its own roots, but when grafted standard high on the laburnum, it forms a very singular and beautiful object, either when covered with its yellow blossoms in June, or with its fine reddish pods in August. It is a native of Siberia, where it grows on dry gravelly hills near the rivers Wolga and Don. It was first introduced in 1780. It grows well in any good garden soil, and is increased either by grafting it on the laburnum, or by means of seeds, which are produced freely in most seasons. The leaves are alternate, pinnate, and terminated by a small acute spine-like point, and a pair of lanceolate stipules at the base; the leaflets are small, orbicular, and entire, with a small acute spine-like point; they are smooth on the upper surface, velvety beneath, and mostly

in seven opposite pairs. The flowers are pea-shaped, bright yellow, and produced in axillary pedunculate racemes, containing from seven to ten flowers. The legumes or pods are oblong, somewhat cylindrical, with a sharp bristle-like point, and stalkless; when young they are beset with soft hairs mixed with stiff glandular bristles, and are of a bright reddish colour; the seeds are ripe by the end of August. Its synonyms are *Cytisus volgaricus* and *pinnatus*. The name "*Calophaca*" is derived from "*kalos*," beautiful, and "*phake*," a lentil, in allusion to the beauty of the plant when covered with its pea-like blossoms and reddish pods.

THE SCARLET BERRIED ELDER (SAMBUCUS RACEMOSA).

This forms a low tree, or large bush from ten to fifteen feet high, which grows as freely as the common Elder in any ordinary garden soil, and is as easily increased. When trained to a single stem, and covered with panicles of fine large berries, which resemble miniature bunches of grapes of the most brilliant scarlet, it has a splendid appearance. It is a native of mountainous in the middle and south of Europe, and was first introduced in 1596. The leaves are opposite, rather large, pinnate, tolerably smooth and pale green, with five oblong, acuminate deeply serrated leaflets, unequal at the base. The flowers are borne in terminal ovate panicles, whitish-green in colour, and they are produced in May. The berries are globular, succulent, comparatively large, bright scarlet, and are ripe in August.

Silver-Bell Trees. — The Two-winged Halesia. — The common Silver-bell Tree (*Halesia tetraptera*), sometimes improperly called "*Snowdrop*," is not by any means rare. In May its branches are completely loaded with white, pendulous, bell-like flowers, which are succeeded by a four-winged capsule. This species is found from Virginia southward, especially along the banks of rivers, where it forms a small tree from ten to thirty feet high. Farther south, in Georgia and some other States, is found the Two-winged Silver-bell (*Halesia diptera*), which has larger leaves and much larger flowers, which are an inch or more in length, and which is distinguished by its strongly two-winged fruit. There are other characters which distinguish the two species, but it is unnecessary to mention any but the most obvious ones. The last-named species is seldom to be obtained in nurseries, which is to be regretted, as, on account of its larger flowers, it is a much finer ornamental shrub than the other. The genus *Halesia* was named in honour of Stephen Hales, whose experiments upon the evaporation of water by foliage are so often referred to. The specific names refer to the number of wings upon the fruit.—*Hearth and Home.*—[*Halesia tetraptera* has been described by Mr. Gordon, in *THE GARDEN* (see p. 392). It is universally called *Snowdrop tree* in England and *Silver-bell* in America. The *Halesia diptera* is more or less tender in the climate of London, and only flowers when trained to a wall with a favourable aspect. There was at one time a fine plant of it trained against a wall in the nursery of the late Messrs. Loddiges, of Hackney. Several years ago it was generally known under the name of *Styrax grandifolium*, which is, however, a very different plant.]

The Derby Arboretum Anniversary.—This was celebrated the other day under a downpour of rain accompanied by thunder and lightning, a circumstance which, however, does not seem to have greatly affected the funds. The following are the actual sums which have been paid into the bank during the last ten years:—

Number admitted.			Money taken.			Number admitted.			Money taken.		
	£	s.	£	s.	d.		£	s.	£	s.	d.
1863	25,000	560	19	6		1868	22,000	542	17	3	
1864	31,000	642	0	0		1869	32,900	673	0	9	
1865	30,400	552	6	6		1870	31,500	660	0	6	
1866	23,572	623	1	9		1871	18,000	400	0	0	
1867	21,975	550	12	7		1872	30,000	640	17	3	

Here and there were presented unmistakable evidences of the storm, and also of the presence of British excursionists, who are not over scrupulous in their treatment of shrubberies and flower-beds.

The Decdar.—In answer to your correspondent "*Cedrus*" (vol. i., p. 558), I should advise him to have seedling Decdars, as they grow faster and make much more handsome trees than those produced either from grafts or cuttings. Of course, he can get them by either of these ways, but they seldom make good well-branched trees, and only assume the character of a branch. Most of the fir tribe can be propagated in this way, but the plants are generally disfigured; and to give them a tree-like appearance, they require great attention in pruning and tying their branches, and often then without effect. Therefore, if good, fast-growing, well-branched trees are the object, by all means have seedlings.—J. TAYLOR, *Maesgwynne, Whitland.*

THE KITCHEN GARDEN.

CULTURE OF SPINACH.

In order to keep up an everyday supply of Spinach all the year round, sow the last summer crop on a well-prepared border or quarter about the middle of this month, in drills about eighteen inches apart; this will yield a good supply of fine large leaves till October is out. For the late or winter crop prepare about the end of the month a border or sheltered quarter; apply a good coating of thoroughly decayed manure, trench the ground well and cast it up into ridges, so as to expose as great a surface as possible to the influence of the atmosphere. Every dry day till August 10th or 12th cast down the ridges and pulverise with a steel fork, so as to sweeten and incorporate all together. Then draw lines a foot apart and sow the hardy Prickly variety. As the plants advance thin them out from six to nine inches apart, and maintain a healthy and vigorous growth by constant surface stirrings in suitable weather; this, if attended to, prevents canker, and encourages the production of abundance of fine leaves for use every day throughout the winter. Timely forethought should be taken to shelter a portion with a row of short stakes about eighteen inches high, interwoven with fern, straw, evergreen branches, furze, heath, or other material, which should be neatly applied, and also made wind-proof. Thatched hurdles or frames, cheaply made, of battens backed together and thatched, might also be used for the purpose of protecting from frost. Make another good sowing of the same hardy Spinach on ground as well prepared as the last, about August 20th or 22nd, in lines a foot apart, and thin out to four or six inches between the plants. This will furnish a supply for use next spring, for although there is only the short period of eight or ten days between this sowing and the last, this one will yield but very little before spring. To keep up a regular supply in summer, sow the round Spinach on a warm sheltered border and between lines of Early Peas, &c., once a fortnight from February to May, and for the next six weeks after that on the coldest and dampest part of the garden; and if a north aspect can be provided, so much the better.

In March sow New Zealand Spinach in heat; pot off, and encourage the growth of a few plants till about the middle of April; a very few plants will produce an enormous quantity of leaves if turned out on a slight hot-bed, as is done with ridge Cucumbers, and let hand-glasses be placed over them until strongly started and well established. The hotter and drier the weather, the stronger will this Spinach grow, a circumstance quite at variance with the winter and summer varieties, which "bolt" or start to seed at an early stage in hot weather and in warm situations, particularly on light or poor soils, or when under shallow culture.

Another famous substitute for Spinach in summer is the foliage of the Silesian White Beet, a row or two of which will produce a quantity of fine clean healthy leaves in the heat of summer. In autumn the silvery clean white stalks of this famous Beet make a very good substitute for Seakale; they are served at table in the same way, and make a capital wholesome dish. JAMES BARNES.

Watering and Mulching.—Waterings, effectual but not frequent, and stirring the surface or mulching immediately afterwards, form the secret of success in droughty seasons. Mulching in itself has a wonderful effect on nearly all kinds of vegetable crops, and notably on peas, all the Brassica tribe, celery, and potatoes. The handiest material for such purposes is short grass, which is always plentiful. A good mulching of this between the potato rows, instead of earthing them up, increases the weight of the crop largely, but it is a disadvantage in wet seasons. Raspberries luxuriate under a thick mulching of grass, which is worth a heavy dressing of manure to such moisture-loving plants. Strawberries are equally benefited by the same treatment, and the mulching should be done early in spring in their case. On apples, pears, gooseberries, and currants, in shallow warm soils, a top dressing of any loose material seems to work little less than a miracle. Indeed, such a practice is commendable under almost any circumstances, and at all times saves an immense amount of labour in watering.—J. S. W.

Earthing up Celery.—Will you be good enough to answer the following questions: Is it, or is it not, necessary to earth up celery while it is growing? or should the operation be delayed until the plant is nearly ready for pulling? If not absolutely necessary, is it better to earth gradually from time to time, or all at once two or three weeks before using? I am aware that these questions are answered by anticipation in several good treatises on gardening—Sir J. Paxton's among the rest; but, strange to say, the practice of delaying the earthing, which they all recommend, is contrary to that of every practical gardener I have spoken to on the subject. All my

neighbours earth their celery, and by degrees; and an old professional gardener of some fifty years' experience advises me to do the same. What am I to do?—E. G.—[It is certainly not necessary to earth up celery when it is growing rapidly; more than that, it is bad practice. A little sprinkling of earth, pushed down after a heavy watering to prevent evaporation, is all we should give during the growing season, and we know it to be a fact that some of those who grow the finest celery in the country, do not earth till full growth is attained. Indeed, some of them do not earth at all, but effect the blanching by other means. That some old professionals of fifty years' experience, and many other persons, pursue quite a different course, we are well aware, yet one would think that a single hint would suffice to point out that it is difficult to give abundant waterings to celery, and impossible for it to benefit by the natural rains, if we pile a sharply-sloping bank of firm earth close along each line long before the plants have attained maturity or vigour. And no plant is more benefited by profuse waterings than this, naturally an inhabitant of very wet places. The repeated earthings which celery receives in the majority of gardens are not only harmful to the celery, but the cause of a great waste of time and labour.]

Crops for Poor Land.—Will you or any of your market-gardening readers tell me what is the best crop for poor land?—L. H.—[An ordinary crop of onions is worth about £40 or £50 per acre. On poor land onions pay better than any other vegetable. 1. On an acre of ground during the summer, onions will produce £40; during winter, lettuce and spinach, £20; total, £60; 2. On the same amount of ground, cabbages in summer will fetch £30; the same in winter, £10; total, £40. 3. On the same, potatoes in summer will realise £20; lettuces in winter, £20; total, £40. The labour of the second and third is much greater, and requires better land than the first.]

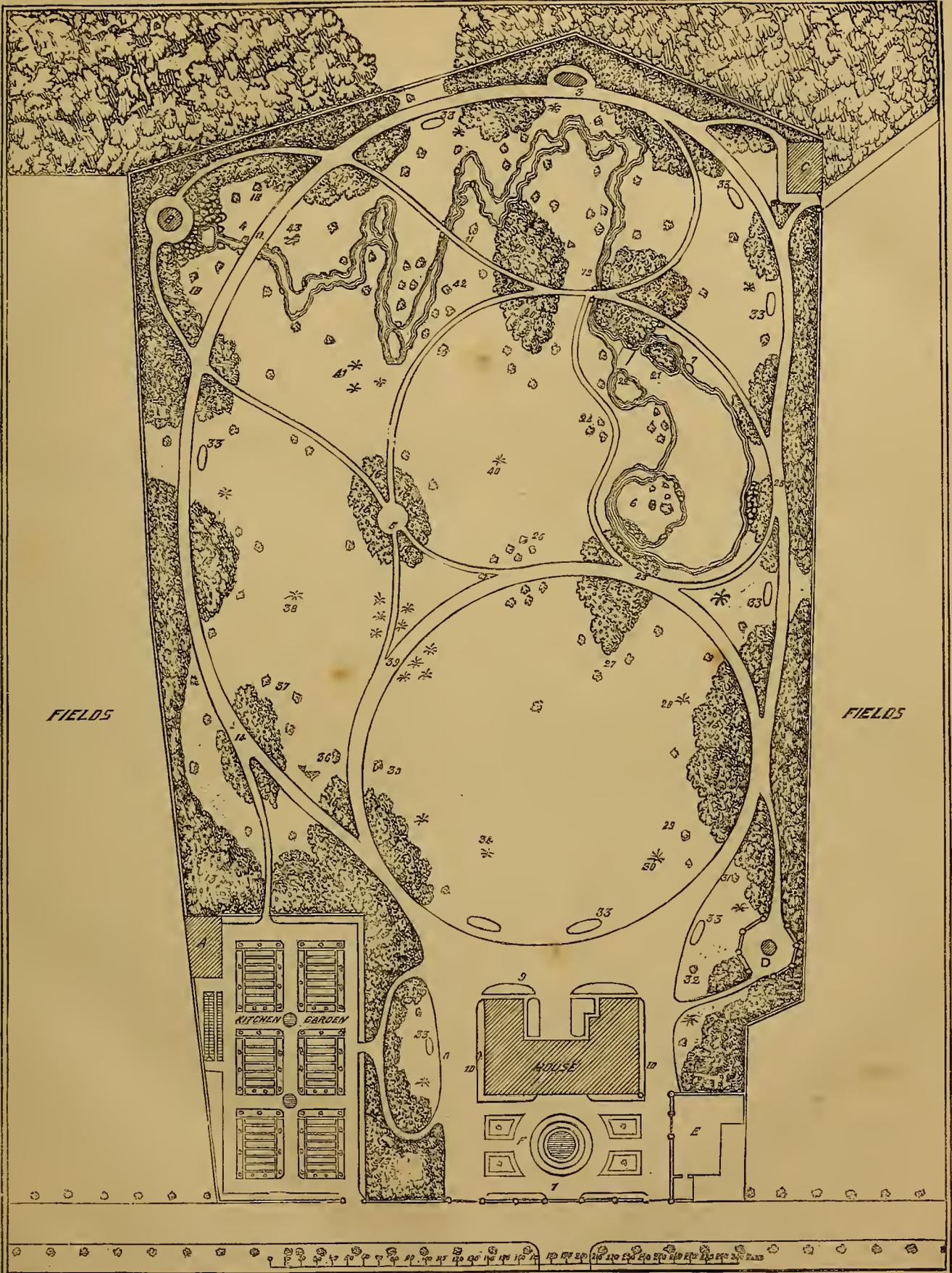
Lettuces.—Careful trials of many sorts of cos and cabbage lettuces, spread over several years, and continued during the present summer, have shown that most of the so-called new kinds of white cos are, after all, but mere selections from the old Paris white cos. The two best strains are Waite's Alexandra and Dimmick's Victoria, the first being exceedingly even, true, and slow to run to seed. The latter also inherits most of these qualities, but it is specially to be commended for its great size and usefulness for exhibition. Of winter cos lettuces the largest and best are Acme, white cos, a very fine hardy variety, and Sugarloaf, brown cos, a strain of the black-seeded Bath cos. Neither of these require tying, and they are without exception, first-rate. Among cabbage lettuces, the best in my opinion is Leyden White Dutch for the very earliest. If sown with the summer white cos kinds, it will be ready for cutting a fortnight before them. And with it also sow Victoria cabbage lettuce, a fine solid kind, but several days later, and one which stands well. For winter work sow in the end of July and beginning of August Stanstead Park brown cabbage lettuce, the finest grown, and with it, Fearnought cabbage lettuce, which is much like the last, but stands longer. Than these no better selection can be made.—A. D.

Radishes.—Kindly give me some information as to the best mode of growing Radishes. I have never yet been able to get a good crop, although I have tried in good and in bad soil, in all situations and in all seasons. I can grow as fine a crop of tops as anyone, and as much seed as would sow any market garden near London; but as to the needful there is nothing but small wiry roots.—R. F., Everton.

GARDEN DESIGN.

A GARDEN AT RAMBOUILLET, NEAR PARIS.

OUR plan this week is that of a garden near Paris, which may be considered as a fair example of the modern French garden. It will be seen that it has many good features, and that indeed it could not be easily found fault with, if it were not that the centre is too much broken up by the intersections of the walks. By way of justifying the existence of so many walks, our French friends tell us that it is necessary to have many more walks in France than in England, in consequence of the absence of as good a turf as we possess, and that in the absence of turf on which to walk it is necessary to have more walks. We see little force in these explanations, as we have seen very charming lawns near Paris, even in the parks and on the race-courses. We have, we are glad to say, seen some French gardens in which this obviously objectionable system did not exist, as, for example, in the Little Trianon, and also in Rothschild's garden in the Bois de Boulogne. The most redeeming feature about the plan in question is the good attempts made at concealing their intersections. We may point out the graceful way of grouping and isolating trees



A MODERN FRENCH GARDEN.

shown in this plan. The water, too, is well treated in all parts. The absence, moreover, of any geometrical patterns of beds about the ground is noteworthy, and a real advance in ornamental gardening. We must, of course, have beds for flowers in such places, but it is better to rest content with a simple form like the ovals here shown, and to depend for effect on the plants we put into the beds than in any degree to depend on the mere contour of the beds themselves.

The following are the references to the plan, which is the work of our talented friend, M. Edouard André, ceaseless worker, horticulturist, botanist, and landscape gardener.

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| 1. Entrance. | 22. Willow Island. | 36. Western Plane. |
| 6. Island. | 23. Collection of Willows. | 37. Group of Silvery Limes. |
| 9. Rhododendrons. | 24. Group of Deciduous Cypress. | 38. Wellingtonia. |
| 10. Flower beds. | 25. Mass of Trees. | 39. Group of Deodars. |
| 13. Forest trees. | 26. Group of Limes. | 40. Abies Nordmanniana. |
| 14. Conifers. | 27. Group of Cedrus. | 41. Group of the Bothan Pine. |
| 15. Choice mixed plantation. | 28. Abies nobilis. | 42. Alnus cordata. |
| 16. Douglas fir on mound. | 29. Magnolia acuminata. | 43. Araucaria. |
| 17. Forest trees. | 30. Thujaopsis borealis. | |
| 18. Rock Shrubs, &c. | 31. Magnolia grandiflora. | F. French garden. |
| 19. Poplars in variety. | 32. Magnolia conspicua. | E. Gardener's house, &c. |
| 20. Alders in variety. | 33. Flower beds. | D. Kiosque. |
| 21. Island planted with Tamarisks. | 34. Abies alba. | |
| | 35. Tulip Tree. | |

We do not include in this list herbaceous plants, those by the side of the ornamental water, small isolated shrubs, &c.

THE ROYAL GARDENS, KEW.

DR. HOOKER AND MR. AYRTON.

THE public, says the *Times*, will hear with regret that, since Mr. Ayrton's appointment to the post of First Commissioner of Works, such difficulties have arisen with respect to the management of Kew Gardens as to occasion imminent danger of Dr. Hooker's resignation. We state the facts as they are at present known, subject to correction by future explanations; but the correspondence which has passed with the Treasury leaves little doubt of their substantial accuracy. One of Mr. Ayrton's first acts after taking office was to send a reprimand to Dr. Hooker. It is said the occasion was supplied entirely by the First Commissioner's own misconception; but, at all events, it was the first experience of the kind during Dr. Hooker's thirty years of service. But more material acts of interference followed. A previous First Commissioner had intrusted Dr. Hooker with the task of remodelling the heating apparatus throughout the establishment; and, in accordance with the director's plans and estimates, a range of hothouse was constructed which is the completest in existence for scientific purposes. In 1871, without any notice being given him or any reason assigned, he was superseded in the control of this apparatus, and he was left to discover his supersession accidentally, through one of his own subordinates. On addressing an inquiry to the First Commissioner, he was simply informed that he had been superseded, and would have to govern himself accordingly. Dr. Hooker seems to have reason in arguing that to trust a cultivator with the care and treatment of valuable collections, and to make him amenable to the opinions of others in respect of the apparatus he requires, is as wrong in principle as to refuse a surgeon his choice of instruments and hospital appliances. But, at all events, courtesy and justice alike required that Dr. Hooker should have been consulted before the change was made. It would seem, in fact, that in 1870 a director of works was appointed under the Board of Works, and that measures were taken to re-organize the management of the gardens. It is alleged that since then the curator has been removed from his duties under Dr. Hooker without any previous communication, and has been empowered in various respects to act independently. Plans and estimates were submitted to the Treasury for extensive alterations in the Museum at Kew, without Dr. Hooker being so much as informed of the intention. These works, it is said, would have greatly embarrassed him as director of the museum, and they were eventually abandoned on reference to Mr. Stansfeld. It is even alleged that Mr. Ayrton invited the curator to accept a position which would have involved authority over the works at Kew, requesting him, at the same time, to keep the invitation from the knowledge of Dr. Hooker. In short, Dr. Hooker charges Mr. Ayrton with "evasion, misrepresentation, and mis-statements" in his communications on the subject to Mr. Gladstone, with ungracious and offensive conduct towards himself, and with acts injurious to the public service and tending to the subversion of discipline. Mr. Gladstone, having been appealed to, referred the matter at last to a committee of the Cabinet. After their inquiry Mr. Ayrton was told that Dr. Hooker should in all respects be

treated as the head of the local establishment at Kew, of course in subordination to the First Commissioner of Works. But Dr. Hooker, not unnaturally, wishes to be more definitely informed respecting his future duties and relations to Mr. Ayrton; and he has addressed distinct inquiries to the Treasury whether he is to have restored to him the control of the heating apparatus, whether he is to be consulted respecting estimates, whether he is still to be intrusted with the custody and distribution of scientific works, whether he is to be consulted in case of proposed changes in the position and duties of his subordinates and in case of proposed works which would affect his duties and responsibilities, and whether he or the director of works is to have control in matters for which they are jointly responsible.

We shall not follow the *Times*, says the *Echo*, in giving a premature judgment upon the difficulty that has arisen between Mr. Ayrton and Dr. Hooker, of Kew Gardens. There is probably no department of the public service in which there is not, in the public interest, a demand for unpleasant work; for pruning the unwholesome growth of years of unchecked extravagance. It is not likely that we shall get this unpleasant work well done if we are hasty to find fault with the reforming Minister. Let us hear what Mr. Ayrton has to say for himself. We may depend upon it that we shall never get an economical Minister, whose *modus operandi* will be pleasant to the permanent officers of the Civil Service.

The Thames Embankment.—The Metropolitan Board of Works has been recently considering the question of the supply of trees and plants for the ornamentation of the Victoria and Albert Embankments. A statement having been made that the charges for the trees and plants supplied were excessive, and the supply itself deficient, the matter was referred to a committee for investigation. This committee finds, in the first place, that the charges, although high, are not unreasonable; and that their amount is due to the fact that the plants, in order to be transplanted properly, had to be conveyed in their own earth, which involved considerable additional expenditure. The deficiency in the number of the plants is attributed by the committee to three causes—first, to the haste with which they were planted, in consequence of which many of the plants were put into land not always thoroughly adapted to their characters; secondly, to the inclemency of the weather, which killed a large number of the remainder; and thirdly, to the hostility of the roughs, who stole or destroyed the rest. The prospect, we fear, is not a very hopeful one. A recurrence of the first of these causes may perhaps be avoided for the future by the exercise of greater deliberation and judgment on the part of the board; but the severity of English summers has now grown proverbial; and at present, unfortunately, our roughs seem almost as little under our control as our weather. Perhaps the only course to be pursued is for the board to keep a constant supply of plants on hand to replace those which it may please our masters from time to time to destroy or carry off, and to await with patience the time when the plants shall have grown too big to be removed, and when perhaps the tempting facilities which they will then offer to the roughs for hacking their names upon and otherwise defacing them will enlist the sympathies of the latter in the cause of their maintenance.—*Pall Mall Gazette*.

Our Gardens.—A nation which loves gardens as we English do is blessed with a taste of which the influence may be said to be wholly beneficial, and to the development of which there need be no limits. We have a climate and soil which permit of our exercising our propensity to an extent almost impracticable elsewhere. A little further south it is too hot and dry; a little further north too cold and stormy. Even in Canada and the States the alternations of heat and cold are too great for most of our flowers, and after a fortnight of spring, comes the burning summer, to scorch up every delicate plant. Nowhere in the world, save in the Low Countries, and some parts of Germany, is their grass like ours. The queen of a southern country spent hundreds of pounds in vain to deck her palace garden with a rood of such sward as covers half the vales of England. The grandest trees of the world, from the Himalayan pine to the giant Sequoia (Wellingtonia) of California, will flourish on our soil as freely as our own glorious oaks and elms and beeches and limes, and every year adds to our treasures, inasmuch that if old Evelyn were to awake he would have had a new science of arboriculture to learn, and Bacon might write another essay on the Garden, with a new world of sweet and lovely flowers to describe. Like the paradise spot in which grew Shelley's "Sensitive Plant," England may boast that

"All sweet flowers, from every clime,
Grow in that garden in perfect prime."

We have, in truth, a garden-island, "girded by the inviolate sea"—a land which is to the rest of the world much what the Isle of Wight is to England; and heartily may we be thankful that so it is. Against our gloomy skies, our smoke-begrimed cities, our over-busy and toilsome lives, we can set the gardens of England—and the balance is not wholly against us even in the matter of beauty and enjoyment.

GARDENING ROUND LONDON.

(DURING THE PRESENT WEEK.)

BY OUR SPECIAL REPORTER.

PRIVATE GARDENS.

Indoor Plant Department.—Conservatories now exhibit more green leaves than showy flowers; every attention is therefore paid to keeping the foliage clear of insects of all sorts, and to the encouragement of its healthy development. The *Clianthus puniceus* is a plant very liable to attacks of red spider, and must, therefore, be closely watched and often syringed. Plants in pots are more likely to suffer from drought at this season than those in borders, and must, therefore, be frequently examined. Tree Ferns, some Palms, and a few quick-growing large plants in borders, should have basins of earth formed round their bases, so that a thorough soaking of water can be given to them at one time without running over the border. Fuchsias, both in the form of climbers and pyramids, are now about their best. Pinch their side-shoots in freely until a few weeks prior to allowing them to bloom, and give a little liquid manure about twice a week. In growing the double-flowering kinds of Pelargoniums, endeavour to induce a stubby growth; and, after their flowers are fairly set, assist a freer development by means of manure water. Show Pelargoniums that have done blooming are set outside, so as to enable them to ripen their wood, and are allowed to dry off gradually. Lilies belonging to the Japanese section are now coming beautifully into bloom, and are liberally supplied with stimulants. When repotted the pots are only filled to within two inches or so of the top, so as to leave room for top-dressings of good rich compost. Before cutting the blooms of these Lilies, the anthers are carefully removed, so as not to spoil the petals by the diffusion of the pollen. Erythras coming into bloom are assisted by means of manure water. Statives are repotted as they require that attention, but in the case of old plants, top-dressings and manure-waterings are resorted to instead of giving them a shift. Foliage plants now constitute the best feature in stoves, Alocasias, Caladiums, *Gymnostachyums*, &c., being among the most striking. All these enjoy partial shade and a sweet, humid, warm atmosphere. Allamandas, Dipladenias, Clerodendrons, and Bougainvilleas, occupy the chief positions among flowering plants, not only when trained on trellises in pots, but also on the roof, where they contrast admirably with the lovely *Cissus discolor*, a climber that thrives best when its roots have a regular and steady bottom heat. The finest plant of it perhaps ever seen was grown in a Pine stove, where it got a little bottom heat summer and winter; there it remained evergreen all the winter, and in spring pushed forth with such vigour as to require constant attention to keep it within bounds. Ornamental baskets are now being filled; *Caladium argyrites*, *Dracaenas*, *Coleus*, &c., occupy the centre, while round the sides are placed variegated *Panicum*, long trailing mosses, and other plants. Amongst Orchids, the *Disa grandiflora* is, perhaps, the finest at present, and one admirably adapted for conservatories.

Flower Garden and Shrubbery.—Privet, Hawthorn, Holly, Yew, and other hedges may now be pruned with the knife, but where they are not in conspicuous positions that operation may be done with the shears. Evergreen shrubs, and even choice Conifers, are now being pruned into shape with the knife. From *Rhododendrons*, *Magnolias*, *Azaleas*, and other similar things, the beauty of which is over, the old flowers are being removed, and, where time can be spared, the seed-pods also are picked off. Flower beds are now making satisfactory progress. In some cases even annuals have to be kept within bounds, so rapidly are they growing, and where the bedding plants cover the ground, the annuals are removed to make room for them. *Alternantheras* are growing as freely this season as we ever remember to have seen them, considering that it was almost the end of June before they were planted out. In order to guard against failure, a reserve stock of all bedding plants is kept to fill up blanks. Should they not be required for that purpose they will make good plants for yielding cuttings next spring. Herbaceous plants that have done blooming are partially cut back, but not so much as to render them unsightly. All the finer kinds of herbaceous and alpine plants have the soil around them mulched. Around the base of Rose trees are formed little basins, which, in some cases, are filled with well-decomposed litter; their real purpose, however, is to retain water, and occasionally liquid manure.

Indoor Fruit Department.—Succession Pine plants which have filled their pots with roots are being shifted. Suckers and crowns where required are potted and plunged in front of growing plants. To winter-fruited kinds, such as the Jamaica, brisk bottom-heat is kept up, and they are syringed two or three times a week. Vines that have yielded their crops, now and then receive a good syringing. To ripe grapes a free circulation of air is kept up, and

to those colouring, in addition to a little air night and day, a little fire-heat is given. To pot vines for next year's crop, light, air, and water are freely administered. Fig trees, in many cases, are now bearing their second crop. In Melon pits, in which the fruit is nearly ripe, a thorough watering is given, so as not to necessitate another until the fruit has been cut. Pinching, thinning fruit, syringing, &c., are alike applicable to Melons and Cucumbers. Beds for Mushrooms are being formed for autumn and winter bearing. They are covered with straw, and a moist atmosphere is maintained by means of sprinkling floors and similar surfaces.

Hardy Fruit and Kitchen Garden.—Last Saturday's storm has done good in the way of keeping down insect pests; nevertheless, wall trees are still gone over, and well washed by means of the garden engine. Now that the proper amount of wood can be selected for next year's crop, superfluous growths are removed, and such young shoots as are retained are laid in in such a manner as not to shade the fruit. Young shoots of Figs are loosened from the wall, and Cherries and bush fruits are netted to keep them from birds. Weeds are now growing marvellously, and not only is the hoe useful in their destruction, but in keeping the soil open; and those crops that have been well attended to in this respect have made considerable progress in advance of those that have had no such attention. Of Peas, another late sowing may be made of the tall kinds, such as Veitch's Perfection. Of Cabbages, some are being planted out for colworts, and they also furnish good heads throughout the winter. Broccoli is planted out in good firm ground, but not too rich, as that would tend to make them so luxuriant that they would not stand the winter well. An intermediate crop of Celery is planted out. The main crop of Endive is sown on a cool situation; a few of the earlier sowings are planted out. Lettuces are sown in a cool shady place, as are also Radishes, Turnips, &c. Small Salads are sown often and in small quantities. A few early Carrots are sown for drawing young. Celery for succession is being planted. Gourds and Vegetable Marrows have the ground about them mulched with litter; the shoots are pegged down, in order to encourage them to root at the joints.

NURSERIES.

Indoor Department.—Hard-wooded plants from autumn-struck cuttings, are now being potted off; also grafted Conifers, &c., which are placed for a time, until they get established, in gentle heat, and well shaded. In cool houses, Japanese Maples are being layered by plunging the pot containing the stock in tan or cocoa-nut fibre and pegging down all the branches, which are cut a little at such joints as are inserted in the material prepared for their reception; they are likewise increased by means of inarching. Clematises are also being layered under glass, and the finer kinds, or those that require to be increased quickly, are propagated by means of cuttings; such cuttings as are rooted are potted on, and placed under hand-lights in the propagating pit and well shaded for a time. They soon start into growth, and as they advance are staked. Primulas from seed are pricked off into pans, and those from cuttings are being repotted. Begonias, such as *intermedia*, *Chelsonii*, and *Boliviensis*, are being rapidly increased by means of cuttings struck in heat; the large-leaved kinds that were struck earlier in the season, and which have now formed little crowns from several centres in the leaves, are potted off singly into thumb pots. *Torenia* are being increased from cuttings, and rooted ones potted off. Young Allamandas, *Bougainvilleas*, &c., are also shifted as is necessary. Young plants of *Aristolochias* and *Dipladenias*, if likely to become pot-bound, get another shift, and great care is taken to prevent their shoots from getting entangled or broken. *Hæmadietylon nutans*, a handsome-leaved stove climber, is equally well cared for. They enjoy a warm humid atmosphere. Young plants of *Pentas carnea* are shifted frequently in order to get them to form nice specimens; the flower spikes are frequently removed for the purpose of throwing increased vigour into the plants, and also in order to keep them free from mealy-bug, which too frequently gets established amongst the flowers. Young *Humeas* for next year's decoration are repotted into four-inch pots, and kept near the glass in gentle heat or in cool houses; the last sowing is still in the seed-pan, or are being pricked off. *Yuccas* are being increased by taking off young shoots, and inserting them singly in pots placed in a cold frame, well shaded for a time. Young *Azaleas*, that were not repotted this season, are now being gone over, and top-dressed with good peat and sand. Specimen Heaths, and other Cape and New Holland plants not done flowering, are kept in cool houses and well aired. Young plants, and also large specimens, the flowering period of which is past, are set on beds of ashes out of doors, and diligently attended to with water. Besides watering the plants, the whole of the beds on which they are placed are well saturated every dry day.

Out-door Department.—Chrysanthemums are being repotted and placed outside. Passion-flowers in six-inch pots are securely

fastened to their stakes, and plunged outside in a well-sheltered border. Sollyas, Desmodiums, Hardenbergias, Eecremocarpus, Lophospermums, and many other greenhouse climbers are also plunged outside. Besides the climbing plants that are turned out to mature their wood, such subjects as Cytisus, Boronias, Eriostemons, Banksias, Daphnes, Prunses and many others, are also set out of doors. Pot Roses that throughout the spring and early summer produced flowers are now being transferred from the houses they were grown in, and plunged in beds in the open air; the surface of the pots, however, is not covered, but left exposed, so that water may be conveniently applied. In addition to such Clematises as are layered indoors, those that are growing in outdoor beds are also being layered in pots plunged a foot or so from the stock. The layers are slit up a little at the joints, pegged into the pots, and covered over with a little mould. Pinks are being increased from cuttings inserted under hand-lights at the foot of shady walls, in prepared borders which are covered on the surface with a thin layer of silver sand. Any hard-wooded greenhouse plants from autumn-struck cuttings, or Conifers not yet potted off, are kept freely exposed in cold frames. Rhododendrons, in this year's seed-pans, are placed outside, at the back of frames, so that they may receive a little protection from the sashes that are drawn down over them when the frames are open, and at the same time get a free circulation of air. The budding of Roses has begun in several places, and the stocks are everywhere being prepared for operating on. In the fruit department training is now the most important feature. Young Fig trees planted along the foot of walls, are not yet tied in to the walls; the young wood is permitted to reach a sixth joint, but not more than that. Sweet Peas for seed have been well staked, and those having a tendency to fall are tied up with string or matting. Onions and Leeks for the same purpose are just coming into bloom, and along the drills stakes are placed at intervals of from twelve to sixteen feet; to these stakes are attached cords, which run along both sides of the plants, and assist in keeping them upright.

MARKET GARDENS.

Crops now ready for market consist chiefly of Cucumbers, Vegetable Marrows, Peas, Potatoes, Lettuces, Globe Artichokes, Cabbages, Cauliflowers, Carrots, and Beet, &c. The Asparagus season being now over, the plants are allowed to mature their shoots, which they do not produce in too great abundance, nor are the plants so near one another as to be injurious to other crops grown on the same ridges. Besides Lettuces and French Beans, there are also grown on these ridges, Beet and Nasturtiums, the latter of which produce an abundance of cut flowers for market. Cucumbers in frames are duly attended to in the way of pinching and removing any decaying leaves that may be on them and regulating the fruit. Some of the growers complain of a rather inferior yield of this fruit this season. Vegetable Marrows are growing rapidly, and bearing abundantly; another plantation of them has just been made. When practicable the surface of the ground is mulched with litter; especially is this the case with Custard Marrows, which are planted in beds eight feet apart, with a line of Lettuces or French Beans between the beds. To Tomatoes, planted in lines three feet apart, a little earth is drawn, so as to form as it were the ground into broad shallow beds, a plan which economises the watering. Beds are being formed for celery by thoroughly working the soil and making them four feet wide with a fifteen-inch alley between them sunk a few inches. The Celery will be planted in the alleys, and Lettuces or Coleworts on the beds. Walls not covered by fruit trees have stakes stuck up against them, on which Scarlet Runners are trained. Onion crops are being gone over a third time and cleaned; their growth is strong, and they do not seem to have suffered in the least from the tramplings received in former cleanings. Beet and other root crops from early sowings exhibit a tendency to run to seed. When fruit trees are thickly planted, and the under crops removed, a mulching of litter is spread over the ground, which not only prevents the soil from becoming too dry, but also preserves the fruit from injury should it happen to fall.

MARKET GARDENING.

BY H. EVERSHED.

(Continued from p. 14.)

THE BEDFORDSHIRE DISTRICT.

THE Bedfordshire district lies in Biggleswade, Sandy, and adjoining parishes. The soil is a sandy or gravelly loam, of excellent quality when not too light or thin, resting on sharp gravel, sand, or sandstone rock. The river Ivel, formerly navigable, runs through the district, joining the Ouse at Tempsford. Water is generally found at

a depth of 16 feet. In order to shelter a level tract, rows of lofty elms, trimmed into excessive ugliness, are allowed to disfigure the country in every direction. The same object might perhaps be attained, with agreement among proprietors, by the planting of fast-growing timber at salient points, to break the currents of wind, and the neighbourhood might be ornamented, as well as protected, by such means, without injury to the crops. The district is not now particularly well situated for market-gardening; certain industries, however, cling to particular localities. Bedfordshire has long been famous, and a favourable soil, the railway, artificial manures, and skill together, have preserved its prestige, so that the labourers who come into the metropolitan district from all quarters in the hoing season prefer to be called Bedfordshire hoers, and to enjoy the credit of having come from a noted district. There are many garden-farmers occupying less than 10 acres, others occupy from 10 to 50 acres, and a few even more, and some are owners as well as occupiers. Spade labour is not resorted to, and the small farmers are accustomed to hire teams of horses when they require them. The crops are kept remarkably clean, and every kind of work is well done; for the employer, instead of sending his men to their labour, is in the habit of taking them to it and keeping them at it, his occupation being so small. Garden-farming is entirely dependent, here as elsewhere, on a supply of manure from outside the farm, consequently, at a distance of more than two miles from the railway station, gardening merges rapidly into farming; and it may be added, that when farmers have been tempted by the large gross returns to combine the cultivation of vegetables with their ordinary business, they have not usually been successful. The business of market-gardening is one in which both the master and his man should have served an apprenticeship.

The crops grown include a considerable breadth of corn, turnip, kohlrabi, and onion-seeds, and a few carrots and parsnips. Scarcely any peas are grown, and none of the "fancy crops," such as flowers and culinary herbs. The main crops are potatoes and onions, both for pickling and for "lofting," *i.e.* storing in airy lofts constructed for the purpose, with louvre boards for ventilation. A large portion of the produce is sent to the manufacturing districts. It is common to sell largely to the dealers or agents who visit Bedfordshire after the middle of June, for the purpose of buying the growing crops of potatoes, which are lifted and marketed under their direction, during the following three months, before the Scotch supply has commenced. This intervention of middle-men seems to be practically necessary, in order to regulate and distribute the daily supply of vegetables at the various distant markets. The succession of crops is not regular. It is observed that turnip-seed is a good, and potatoes a bad preparation for wheat, and that onions ought not to be taken from the same ground oftener than once in five years. A common rotation is: 1, onions; 2, turnip-seed, or potatoes; 3, wheat; followed by such crops as onion-seed (after potatoes), cucumbers, carrots, or parsnips. The most important crop is onions, which receive enormous dressings of manure, and sometimes yield a handsome return. The method of cultivation is the same as at Barking—one ploughing, six inches in depth, and the manure harrowed in with the seed—50 tons of dung per acre are sometimes applied, costing 8s. per ton at the railway, and 10s. when spread in the field. Small dressings of guano are occasionally used, but in the case of onions intended for "lofting," forcing manures must be applied cautiously, as they induce a luxuriant growth; and as bulbs which have been grown too rapidly do not keep satisfactorily, the grower loses the chance of selling his crop at £11 per ton in March! The cost of hoing is £5 for the season.

Turnip-seed or potatoes follow onions, with a dressing of guano for the former and of soot for the latter. Turnip-seed is grown for seedsmen who supply the farmer with stock seed, which is drilled at 24 inches apart, or the plants are transplanted from a seed-bed in November. One ploughing suffices for this crop. The land is ploughed in autumn for potatoes and again in spring, and the sets are planted with a dibble at the second ploughing. In the case of early potatoes a wide furrow of 9 inches or 10 inches is given, and the sets are placed in alternate furrows. Late potatoes are planted in every third furrow of 8 inches or 9 inches. A few other particulars may be briefly noticed. Early potatoes (which are not earthed), and scarlet runners are planted in alternate rows, the latter occupying the whole space between the rows (3 feet or 3½ feet) after the removal of the potatoes. A large breadth of cucumbers is grown. They are manured with perhaps 40 tons of dung per acre, planted thickly in rows, sheltered at 6 feet intervals by rows of rye or onion seed. Some growers sow many acres with this crop. Onion seed is also grown at 2-foot intervals, and is sometimes supported by stakes and string, but more generally by earthing up. The lowest day-wages of the district are 12s. a week; gardeners, however, require skilled labour, and pay higher rates. A great deal of work is done by task.

GENERAL REMARKS.

The preparation of the land for onions indicates that they prefer a solid surface. In the Essex district a ploughing is given before Christmas, a large quantity of short dung is spread on the land during frost, and is well knocked with a fork; it is afterwards harrowed in with the seed. If dung be ploughed in, and especially if it be covered deeply, it is observed that the plant does not get hold of it until late in the season, and a rampant habit is induced at the end of June, when the onion ought to be bulbing. The consequences of ploughing in dung would perhaps be less injurious on old garden ground, which is full of manure. Lisbon onions for salads are sown in August or early in September. Pickling-onions require the same cultivation and excessive manuring. They are sown very thickly, and are bleached by casting mould over them a short time before the crop is secured. The process of brining and skinning the crop for one large grower, employs about 400 women working in sheds. Dung, which is usually placed in large heaps five feet high and frequently ten yards wide, is twice turned for onions.

Peas are not profitable in the field-garden district. An occasional piece of early peas is sown in November, to be followed by some such crop as broccoli, which may be planted as soon as the peas are off. After hoeing, the peas are moulded up and the haulm is laid to check over-luxuriance.

Broccoli and cauliflowers are largely grown on the strong, deep-fruit-bearing soil of Enfield, a spot which is famous for the tribe, and has given a name to one of the varieties of cabbage. The cultivation of cauliflowers and of Walcheren broccoli has been noticed in connection with a garden in Bermondsey. The latter are usually planted after potatoes or cabbages at the end of June or early in July, and are cut from September to December. Market gardeners also provide a crop of broccoli to cut early in spring, sowing the sprouted and winter-white and other kinds to plant early in September after potatoes, &c. A heavy coat of dung is turned in with a deep furrow, on deep soil, by three horses, or dug in when the occupation is small. The earliest are sold in time to sow carrots or onions. Other varieties follow during the spring and summer.

Without plenty of manure and garden cultivation lettuces run to seed quickly. Hammersmith has given a name to one variety, and they are confined in great measure to neighbourhoods where the gardens are small. The Brown Cos is sown in November for early use; this and the white and better, but less hardy varieties, are sown in succession from February till June. The chief demand in London is at the end of May, and during June and July. Early sowings are made in seed-beds, later sowings may be made in drills without transplanting.

With respect to the weight of crops, which is the chief point of agricultural interest, garden crops are generally removed before they are mature, and they are planted thickly with that object. It is not the weight, but the number of bunches, that yields a large return. Prices vary so much that no precise estimates on the subject can be given, although one of my informants lent me his books containing exact accounts of monthly sales for several years. I can report a sale of early potatoes (3 tons per acre) at £11 per ton, on a Saturday in the third week in June; on the Monday the price was £9 per ton, and it soon fell one half. Cabbages when very plentiful are sometimes sold at 4d. a dozen, they ought to fetch 9d.; and it is very satisfactory to the grower when they sell at 1s. a dozen. Three hundred dozen bunches of carrots per acre, including "chumps" or rough carrots, sold to stable keepers, are a very large crop; 2s. 6d. per dozen is a satisfactory price. This year carrots are considered to sell well at 3s. A bunch contains from 50 carrots, early in the season, to 25 when they are larger, 20 tons of Belgian carrots, is considered a good crop; 40s. a ton is a common price at the stables in London. A crop of parsnips generally weighs considerably more; the price of the finest roots varies from 1s. to 1s. 6d. per score of 22. A good crop of collards is 200 dozen bunches. It varies between 50 and 350 dozen, and the smaller crop may pay best, reducing the land but little, and selling perhaps at a high price, with comparatively small deductions for the cost of labour and marketing. One hundred and fifty bushels of peas is a large crop, and £15 on the ground is a very great price, which is sometimes paid by dealers for a crop that would yield 8 quarters of threshed peas; 2s. 6d. or 3s. per bushel are common prices in Covent Garden, up to 8s. for the first early peas, or for "blues" when they come first to market, "whites" being then worth but little. A crop of onions, I believe, weighs about half as much as a crop of swedes in the Eastern Counties, where 20 tons of swedes are a great crop, and from 10 to 15 tons are common crops; price from 5s. to 9s. per hundredweight. Prices are affected by a variety of circumstances which cannot be foreseen. A blight in the early potatoes would raise the price of carrots and other competitive vegetables. Cabbages were selling this year at 1s. a dozen on June 14th, because there were few peas or

potatoes at market. Each gardening district has its inuings, which terminates suddenly; for example, any district which is earlier than another has possession of the market so long as the advantage lasts. During a fortnight last spring immense quantities of cabbages were sent from Essex to the great manufacturing towns in the north.

Lisbon sends the earliest potatoes to London, the French coast and the Scilly Islands follow, then Jersey, Guernsey, Cornwall, and Holland; and by the middle of June, these distant but early districts are driven out of the market, by the arrival of supplies from Essex, &c. Red cabbages have been sold at 160s. per ton early in the season, and at 25s. per ton a fortnight afterwards; or at from 1s. to 4s. per dozen. Lesser movements in the trade are governed by the supply of labour and other circumstances. In a parish where a great many French beans were grown, the erection of a factory absorbed the pickers, and beans were given up, as well as broccoli, which had previously been planted between the rows of beans on the solid ground, which suits them. The garden farmers send their own men with the waggons to sell their goods in open market, instead of consigning them to salesmen. The cost of carrying goods to market, of baskets, packing, and market dues is estimated at 50s. an acre on large garden farms.

The customary prices of Task Work in the Essex district (day wages 15s. a week) are:—Hoeing per acre—cabbages at 2 feet by 15 inches, 1st and 2nd time, 5s. each; 3rd, 4s. 6d.; potatoes 3s. or 4s., and afterwards chopped over by the day previous to earthing; carrots, broadcast, £3; onions, £4. Lifting early potatoes by fork, sorted into firsts, seconds, and chafs, placed in sieves of 56 pounds, or baskets of 1 hundredweight, covered with haulm and weighed in the field, 8s. per ton for a crop of 3 tons. Picking peas, from 4d. to 6d. per bushel. Pulling, bunching, washing, and loading early carrots, 7s. per 20 dozen bunches. A sieve is a basket holding 56 pounds of potatoes, or 5 pecks of peas when heaped, wholesale measures being liberal. A small sieve such as is used for French beans and fruit, holds about half a sieve. A prickle is a conical basket, equal to a half sieve. A punnet is a round open basket holding 10 or 12 apricots, made of the same light material as the conical strawberry-pottle.

SOCIETIES, EXHIBITIONS, &c.

ROYAL BOTANIC GARDENS, REGENT'S PARK.

(JUNE 10TH AND 11TH).

THIS, the last exhibition of the season, was well supported in the way of stove and greenhouse plants, conspicuous among which were *Allamandas*, *Ixoras*, *Heaths*, among the latter being a fine specimen of *Erica Parmenteri rosea*, densely grown and finely bloomed; *Phanocoma prolifera* *Barneisii*, *Statice profusa*, *Dipladenias*, *Vincas*, *Anthurium Scherzerianum*, and a lovely specimen of *Kalosanthes Phoenix* (from Mr. Ward), which was fully two feet in diameter, dwarf, compact, and a complete mass of brilliant flowers. Fine foliated plants consisted of large specimens of *Crotons*, *Dracenas*, *Palms*, variegated *Yuccas*, and some good plants of *New Zealand Flax*. Among *Caladiums* were some large, well-grown plants, so neatly staked that nothing but the foliage was visible. Prominent amongst them was a fine specimen of *C. argyrites*, which, for a dwarf-growing kind, was in an unusually flourishing condition. Of Ferns there was a grand display; among them were some fine plants of *Pteris scaberula*, *Adiantum Farleyense*, *A. formosum*, *Davallia bullata*, and some of the taller growing kinds, such as *Cyathea*, *Dicksonias*, *Angiopteris*, &c. Hardy Ferns, however, constituted the most interesting and numerous group; besides those put up for competition, a large group, staged for exhibition only, by Messrs. Ivery, of Dorking, consisted of some of the finest and most graceful of Ferns. Conspicuous among them were *Adiantum Capillus-veneris*, crested and fringed *Scelopendriums*, a fine plant of *Cystopteris fragilis*, large pans of *Polypodium Dryopteris*, and many fine forms of *Lady Fern*, especially one called *Athyrium Filix femina pulcherrima*, a most graceful plant. Orchids were sparingly shown, but such as were produced were in every way excellent. From Mr. B. S. Williams came some fine plants of *Aërides Larpentæ*, *A. odoratum majus*, *Mitella spectabilis*, a very fine specimen of *Thunia alba*, a well flowered plant of *Barkeria spectabilis*, and an excellent example of *Cypripedium Stonei*. In the amateurs' class were also finely flowered plants, particularly *Phalenopsis grandiflora*, *Odontoglossum Bluntii*, and a fine specimen of *O. Uro-Skinneri*. The most attractive Orchid in the show was, however, perhaps the lovely *Masdevallia Harryana*, in Messrs. Veitch's collection. Of *Fuchsias* several groups of six were contributed, but, although fairly grown, among them there was nothing remarkable, the kinds being confined to such sorts as all of us have often seen before. *Pelargoniums* included zonal, tricolor, and golden bronze kinds. The zonals grown as specimens on the flat system were very fine, some of them being fully three feet through. The finest specimens were *Virgo Marie*, a pure white; *Rose Rendatler*, a pink; and among scarlets, *Pioneer*, *Dr. Lindley*, *Cham*, and *Lord Derby*. Tricolors comprised the commoner kinds, but in this class we seldom get large specimens. The golden bronzes of Messrs. Downie, Laird, & Laing were most luxuriant; they

consisted wholly of fine new kinds. Four Clematides in small tubs, well furnished both with leaves and flowers, were contributed by Messrs. Jackman. They were named Alexandra, rubella, Thomas Moore, and Mrs. James Bateman, all purplish blue sorts. Balsams were shown by Mr. Puttick, Park Road, Acton; they were dwarf, bushy, and well flowered, the blossoms being as double as those of a Camellia. Hardy herbaceous plants in pots were well represented by Mr. Parker, of Tooting, and by Mr. Ware, of Tottenham. Mr. Parker's collection consisted of large well-bloomed specimens of *Coreopsis tenuifolia*, and *C. lanceolata*; *Delphinium Hendersonii*, a lovely deep blue; *Santolina lavenderifolia*, *Eriogonum Fraseri*, a fine yellow; *Betonica hirsuta*, and *B. stricta*, the double pink flowered *Calystegia pubescens*, one or two *Campanulas*, and others.

Among cut blooms of herbaceous plants from Mr. Ware were some fine flowers of the showy *Gaillardia grandiflora*, spikes of the double-flowered *Spirea Ulmaria*, a decided improvement on the single sort; the beautiful *Alstroemeria lutea*, the large-flowered *Crimum-like Amaryllis longiflora* alba, some spikes of the double-flowered blue *Delphinium Mooreanum*, a pretty and useful border plant. Besides cut blooms, Mr. Ware also furnished a group of alpine plants in pots, and an admirable display of *Pentstemons* with large and showy flowers; also a collection of *Phloxes*. A good collection of the last was also furnished by Messrs. Downie, Laird, & Laing. The alpine collection included white and blue varieties of the *Campanula turbinata*, a large open-flowered kind, and very dwarf; *Primula auriculata*, *Selleria radicans*, and the rosy-flowered *Lythrum flexuosum*, a valuable acquisition to our stock of alpine, being of a somewhat prostrate habit, and a very free flowerer.

Miscellaneous collections of plants comprised some fine groups. Messrs. Veitch's exhibition itself was worth going a long journey to see. It contained among other things, *Lomaria zamiaefolia*, a strong-growing beautiful fern, *Adiantum peruvianum*, a kind with large pinnae of graceful form; *A. amabile*, a small pinnate kind, each leaflet being nicely fringed, also a very beautiful kind, *Platyterium alcoicorne majus*, an improvement on the old Elk's-horn; some good crested silver and golden *Gymnogrammas*, and a pretty *Selaginella* called *S. japonica*. There were, moreover, *Aralia Veitchii*, one of the finest of *Aralias*; the beautiful yellow-flowered coral-like *Tillandsia Zahnii*, several fine *Dieffenbachias*, such as *D. Bausii*, and *D. braziliensis*, the latter a finely spotted kind; and some beautiful *Dracaenas*. Of *Crotons* we noticed a handsome kind called *Youngii*, the old leaves of which, like those of *C. undulatum*, assume a red and green colour, and the young ones, the first season, a yellow and green hue. Among flowering plants in this collection, the most striking was *Lasiandra macrantha floribunda*, the blooms of which are very large, and of a deep violet colour. In Mr. B. S. Williams's collection were some fine varieties of *Lilium auratum*; a good plant of *Phormium Colensoi*, one of the finest of the New Zealand Flaxes; some good plants of *Pandanus Veitchii*, and a good pan of *Sarracenia purpurea*. Messrs. E. G. Henderson & Sons had a nicely arranged group of bedding plants, for which they received a prize. Messrs. Lee, Hammersmith, Mr. Morse, of Epsom, and also Mr. Bester, Pine-Apple Nursery, exhibited good collections of stove and greenhouse plants arranged for effect.

Amongst cut-flowers the greatest favourites were the *Roses*, the blooms of which were exceedingly fresh and beautiful. Two new *Roses* furnished by Messrs. Paul & Son were very fine; viz., a Tea called *Chestnut Hybrid*, and a Hybrid Perpetual named *S. Reynolds Hole*, which is one of the finest dark red velvety *Roses* in cultivation. A stand of *Tuberose*s furnished by Mr. R. Webb, of Calcut, were so very fine as to make us regret that this sweet-scented flower is not more frequently seen at our exhibitions. *Picotees* and *Carnations*, in the form of cut blooms were exhibited in fine condition by Mr. C. Turner and others.

Fruit was all that could be desired. *Pine-Apples* were numerous and excellent. They consisted chiefly of *Queens* and *Providences*, but there were also examples of *Black Prince*, and a fine fruit of *Charlotte Rothschild*, which weighed seven pounds eight ounces. One of the *Providences* also weighed ten pounds three ounces. There were some pot Vines bearing heavy crops of fruit, each having as many as ten bunches; those from Mr. Cole being wonderfully good, plump, and well coloured. The most wonderful examples of *Grape* culture in the exhibition were, however, two pots produced by Messrs. Lane, of Berkhamstead. On each of these there were no fewer than twenty clusters, all in excellent condition, the berries, as well as the bunches, being large and fine. Of cut *Grapes*, both white and black, there was no scarcity, and their quality, in most cases, was of a high order. White kinds consisted of *Buckland Sweetwater* and *Muscat of Alexandria*; the black sorts of *Black Hamburg* and *Black Alicante*. Several *Melons* were exhibited, but they comprised nothing very remarkable either in point of quality or kind. Only two *Cucumbers* were staged, called *Wonder of the World*, and said to be a hybrid between *Highgate Rival* and *Telegraph*. *Peaches* and *Nectarines* were pretty good, especially those which obtained prizes. The first prize *Peaches* consisted of *Noblesse* and *Padley's Early*; other dishes comprised *Royal George*, *Bellegarde*, *Téton de Venus*, *Violet Hative*, *Admirable*, and *Incomparable*. Among *Nectarines* were *Hunt's Tawny*, *Elruge*, *Roman*, *Pitmaston Orange*, and *Newington*. *Cherries* were not well represented, only a few dishes being exhibited, but these were nice fresh-looking fruit; the kinds were *Bigarreau*, *May Duke*, *Elton*, and *Downton*. Of Figs only a dish or two amongst collections of fruit could be seen. *Norfolk Bearer Apples* from E. Clark, *Holmbush House*, *Horsham*, *Sussex*, were much admired, on account of the admirable manner in which they had been preserved. *Strawberries*, upon the whole, were as good as we have seen them; the kinds were *Elton Pine*, *Princess Helena*, *Comte de Paris*, *British Queen*, *President*, *Lucas*, *Vicomtesse Héricart de Thury*, and

Sir C. Napier. Of bush fruits, such as *Currants*, *Gooseberries*, and *Raspberries*, there were only a few, the *Raspberries* being rather inferior in quality. Perhaps the most attractive fruit on the tables was a dish of what are called *Water Lemons*, or fruit of *Passiflora laurifolia*; they were of a deep amber colour, and about the size of common *Nectarines*. They were accompanied by some of their leaves, which are thick and glossy, not unlike those of the common *Laurel*.

The dinner-table decorations were very interesting. It is evident that great improvements have been effected in this direction by the many exhibitions that have been held during the past few years. The exhibitors, almost without exception, manifested good taste in their arrangements; so much so, that one regretted more prizes than the usual three were not given. The contrast between the groups shown on this occasion, and the wonderful ones that were so often seen eight or nine years ago was marked indeed. The best group in the exhibition, that shown by Mr. Bester, was composed almost wholly of hardy plants, grasses, *Spirea ariæfolia*, *Roses*, *Forget-me-Nots*, &c., all plants within everybody's reach. Some of the groups shown were greatly disfigured by the use of branched glasses. In no case in which these were employed was a really good effect presented. They are quite wrong in design, and even such accomplished artists as Miss Hassard and Miss Blair failed to make them effective. The mixed arrangements of fruit and flowers were quite puerile, with one exception, to which a second prize was awarded. Bouquets of all kinds were very poor indeed.

First-class certificates were awarded to *Picotée Prince of Wales*, P. Mrs. Allerof, and a self-coloured *Carnation*, *Prince Arthur*, from Mr. C. Turner, Slough; to seedling *Picotées* *Miss Norman* and *Charles Williams*, from Mr. Norman, 98, Crescent Road, Plumstead; also to Hybrid Perpetual *Rose S. Reynolds Hole*, and *Tea Rose Cheshunt Hybrid*, from Messrs. Paul & Son. First-class certificates were also awarded to *Anætochilus Ortgiesii*, from Messrs. Carter & Co.; to *Lythrum flexuosum*, and to a species of *Artemisia*, from Mr. T. S. Ware; to *Cureuma petiolata*, from Mr. R. Parker; to a *Hymenophyllum*, from Colonel C. J. Cox, Fordwick, Kent; to *Dipladenia amœna*, and *Gymnogramma grandiceps*, from Mr. B. S. Williams; to *Erica opulenta* and *splendens coronata*, from Messrs. W. Rollisson & Son; to *Selaginella japonica*, *Croton Youngii*, *Adiantum peruvianum*, *Platyterium alcoicorne majus*, *Dieffenbachia braziliensis*, *Echeveria scaphylla*, *Tillandsia Zahnii*, *Leptopteris Wilkenskiana*, *Masdevallia Harryana*, and *Lasiandra macrantha floribunda*, all from Messrs. Veitch and Son; and certificates of merit to a specimen *Fuchsia*, from Mr. G. Wheeler; and to an *Early Prolific Marrow Pea*, from Mr. Evershed, of Godalming.

OBITUARY.

WE have to announce with regret the death of Mr. Wyuess, who has been for very many years gardeuer to her Majesty at Buckingham Palace. He was a quiet, kindly-disposed man, who had many friends, and therefore his loss will be widely felt. He was an enthusiastic florist, and raised in his time several new kinds of *Verbenas* and *Dahlias*. Some of his seedling *Dahlias*, indeed, still rank among our best show flowers of that kind.

COVENT GARDEN MARKET.—July 12th.

Flowers.—Japan *Lilies*, grown in six or eight inch pots, are now plentiful. There are also several small specimens of the beautiful *Amarantus sabicifolius*, and of the sweet-scented double *Gardenias*. Cut flowers consist of many fine spikes of *Orchids*, blooms of *Stephanotis*, *Pinks*, *Dianthus*, *Centaureas*, *Irises*, *Sweet Peas*, *Ixias*, *Roses*, and others.

PRICES OF FRUIT.

	s.	d.	s.	d.		s.	d.	s.	d.
Apples .....half sieve	2	0	3	0	Melons .....each	3	0	8	0
Apricots .....per doz.	2	0	4	0	Nectarines .....per doz.	8	0	20	0
Cherries .....per lb.	1	0	2	0	Oranges .....100	6	0	12	0
Chestnuts .....bushel	8	0	15	0	Peaches .....per doz.	12	0	24	0
Figs .....per doz.	4	0	10	0	Pine Apples .....lb.	6	0	10	0
Filberts .....lb.	0	6	1	0	Plums .....per box	3	0	4	0
Cobs .....lb.					Strawberries .....oz.	0	9	1	3
Grapes, hothouse ..lb.	3	0	6	0	Walnuts .....bushel	10	0	25	0
Lemons .....100	7	0	10	0	ditto .....per 100	1	0	2	0

PRICES OF VEGETABLES.

Artichokes .....per doz.	4	0	6	0	Mushrooms .....pottle	2	0	3	0
Asparagus .....per 100	4	0	8	0	Mustard & Cress, punnet	0	2	0	0
Beans, Broad .....0	0	0	0	0	Onions .....bushel	3	0	6	0
Beans, Kidney ...per 100	1	0	2	0	pickling .....quart	0	6	0	9
Beet, Red .....doz.	1	0	3	0	Parsley, ...doz. bunches	3	0	4	0
Broccoli .....bundle	0	9	1	6	Parsnips .....doz.	0	9	1	0
Cabbage .....doz.	1	0	2	0	Peas, Continental, quart	0	0	0	0
Carrots .....bunch	0	6	1	0	Do. English .....doz.	2	0	3	0
Cauliflower .....doz.	4	0	8	0	Potatoes .....bushel	4	6	6	0
Celery .....bundle	1	6	2	0	Kidney .....doz.	4	0	6	0
Chilies .....per 100	1	6	2	0	Potatoes, New, per cwt.	16	0	24	0
Coleworts doz. bunches	2	6	4	0	Radishes doz. bunches	0	6	1	6
Cucumbers .....each	0	6	1	0	Rhubarb .....bundle	0	6	1	0
Endive .....doz.	2	0	0	0	Salsify .....doz.	1	0	1	6
Fennel .....bunch	0	3	6	0	Savoy .....doz.	0	9	1	3
Garlic .....lb.	0	8	0	0	Scorzoner .....bundle	0	9	1	3
Herbs .....bunch	6	3	0	0	Shallots .....lb.	0	4	0	6
Horseradish .....bundle	3	0	4	0	Spinach .....bushel	0	0	2	6
Leeks .....bunch	0	2	0	6	Tomatoes .....doz.	2	0	4	0
Lettuces .....score	0	0	0	0	Turnips .....bunch	0	6	1	0



"This is an art

Which does mend nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare.*

RECOLLECTIONS OF JOHN CLAUDIUS LOUDON.

BY NOEL HUMPHREYS.

(Continued from page 2.)

In the year 1806 Mr. Loudon was still actively engaged in his favourite occupation of landscape gardening, in various parts of the country, and earning a well-deserved golden harvest as the reward of his persevering labours. In that year he was also employed in a very extensive land reclamation scheme; that portion of his first work which he devoted to "Gaining and Embanking Land from Rivers and the Sea," having attracted the attention of a great Welsh landowner, Mr. W. A. Madox, who had conceived the idea of reclaiming a large tract of land on the coast of Carnarvonshire. Young Loudon was invited to Tremadoc by the spirited projector; and during the progress of the works, which created general interest, the seat of Mr. Madox became the rendezvous of many of our celebrities in science and art; and the wild but somewhat dreary scenery among the Welsh mountains was often enlivened by night, as Mr. Loudon used to tell, by the dazzling glitter of thousands of lights in and around the residence of the great land reclaimer at Tremadoc; while the ravishing notes of the famous Mrs. Billington, whose noble portrait as St. Cecilia, by Reynolds, is one of the great portrait painter's master-pieces, supplied the place of the absent nightingale amidst the solitude of those Welsh valleys. On moonlight nights, as he used to relate, the peak of Snowdon might be seen terminating the vista of the Vale of Tremadoc, and looking gaunt, dim, and grey, as one of the mysterious mountains that Ossian made the spirit home of his shadowy warriors of the mist. The young horticulturist was much dazzled by this visit, and wonder-struck at the lavish profusion of the choicest wines, that flowed like water at the evening entertainments; and he was amazed, too, at the perfect roar of boisterous wit, of the highest class, that generally accompanied the costly eating and drinking. That was the era of clever talkers and great wits, whose places have never yet been effectually refilled.

This phase of the young Scotchman's career was destined to a somewhat melancholy conclusion. Returning from Tremadoc outside the night mail, he became drenched to the skin with soaking and continuous rain, and, omitting to take prudent precautions after the journey, he was seized with rheumatic fever in its severest form, the remains of which finally settled in his left knee, and the medical man he submitted his case to being injudicious in his treatment, the joint became permanently stiffened, which was naturally a source of great annoyance to him, not only at the time, but during the whole course of his life, as it greatly impeded his exertions in the active pursuit of his profession, and also caused a limp in walking, which at the age at which the accident occurred to him severely wounded that personal vanity which is a very general characteristic of youth, and Loudon was then in his prime, and blessed not only with a good constitution but a fair share of good looks. There was also another regret that pursued him through life, which was, that although a large tract of valuable land was eventually reclaimed from the sea, and although fertile meadows were made to appear where the barren wash of the shallow, far-spreading salt tide had so long held its useless, brawling reign, yet, so great had been the cost of the reclamation that, next to ruin, instead of the realization of a vast fortune, was the sorry reward of the spirited projector, and a sore disappointment to his conscientious advisers.

The stiffened knee became, incidentally, the cause of events

which materially altered the after part of his career. While suffering from the severe pain consequent on the diseased joint, he determined to seek for rest and retirement for a while in some quiet country place, and with this view he took lodgings at a farmhouse at Pinner—the Pinner-cum-Harrow of ecclesiastical arrangements, the Vicar of Harrow having the gift of the perpetual curacy of Pinner, which is only four miles distant from the historical Harrow-on-the-Hill.

While at Pinner, he soon became convinced that he could not remain entirely idle, and he seized that opportunity of inquiring into the actual state of English farming, which he found much in arrear of the systems pursued in Scotland. He therefore set himself to work, to investigate the best methods of obtaining better and more profitable crops in England. He was, in fact, the true pioneer of improvements in English agriculture, long before the Mechi's and other great improvers eventually followed in his track. He also devoted himself with great energy at that time to landscape painting in oil; and, considering the short period during which he applied himself to that art, his progress was very satisfactory, several of his works of that class, produced at Pinner, being exhibited by him at the Royal Academy, when the annual shows of the English school of art were held at Somerset House. During the same period, too, regretting his former neglect of the acquisition of languages, he engaged a professor of German, with whom he worked perseveringly during the whole of his stay at Pinner. Having been very successful, by dint of untiring assiduity, he succeeded in paying his expenses, as he had formerly done those of his French master, by the sale of a pamphlet, which he translated from the German as an exercise, the work being sold to Mr. Cadell for £15. We also learn from his journal that he took lessons in Greek and Hebrew at this time, with a view to the tracing out the origin of the names of all the plants described by ancient classical writers. But notwithstanding all this mental activity, he still believed that he was not doing enough, and we find him, in his journal, bitterly reproaching himself for his idleness, in such passages as the following:—"How have I neglected the important task of improving myself! How much I have seen! What new ideas have developed themselves before me, and what different views of life have I acquired since I came to London, three years ago! Yet I am now twenty-three years of age—perhaps one whole third of my life having passed away, and what have I done to benefit my fellow-men?"

So convinced had he become of the radical defects of the English system of farming during his investigations at Pinner, and so anxious was he that the faults he observed should be corrected, that he wrote to his father, who thoroughly understood the practice of the Scottish system, begging of him to come to England, and take up the farm where he had been staying so long, which was then to let. The farm in question was Wood Hall, belonging to a family of the name of Leterrier, whose tenant it was soon arranged that Mr. Loudon, senior, should become, and to which, on the recommendation of his son, he removed in the year 1807.

Young Loudon continued to reside there with his father, and in the following year, 1808, he wrote a pamphlet, entitled "An Immediate and Effective Mode of Raising the Rental of the Landed Property of England, and Rendering Great Britain Independent of other Nations for a Supply of Bread Corn. By a Scotch Farmer, now Farming in Middlesex." This pamphlet created a great sensation in the agricultural world, and probably led to some of the great Enclosure Acts which were passed soon after that period. Hundreds of acres round Pinner were at that time open common, entirely unproductive, though within thirteen miles of London. I have heard an old inhabitant declare that in his youth, so great was the extent of waste common in that part of Middlesex, and extending into Herts and Berkshire, that a horseman might gallop without let or hindrance, from the foot of Harrow Hill to Berkhamstead, over wild heathland, entirely uncultivated, nearly the whole of which has since been brought into cultivation by the great Enclosure Act of the period alluded to.

Loudon was, in fact, as I have said, one of the great modern pioneers of our recent progress in agriculture as well as in horticulture, and his Pinner pamphlet made his advanced opinions on agricultural subjects very widely known. Among

many gentlemen who were attracted by the strikingly new and yet practical views of the young Scottish agriculturist, was General Stratton, the owner of a large landed estate called Tew Park, in Oxfordshire. In order to secure his services on the Oxfordshire estate, General Stratton proposed that the young author should take a portion of his landed property there at an almost nominal rent, in order to induce him to undertake the advantageous management of the rest for the proprietor, by the introduction of the Scotch system of farming, which the General felt convinced, after a careful study of young London's work, would be of the greatest benefit, not only to Oxfordshire, but to every agricultural county in England.

(To be continued.)

GARDENERS IN AMERICA.

MR. PETER HENDERSON, of Jersey city, the well-known American horticulturist, who is now on a tour of observation in this country, has requested us to warn young gardeners who contemplate emigrating to America, against going there at any season but in spring. They should, to secure employment soon, arrive there during the months of February, March, or April. Mr. Henderson informs us that he has often seen great hardships resulting from men arriving in America at seasons when it is almost impossible to obtain work there. We hope shortly to have the pleasure of publishing some remarks on this, and kindred subjects, from the pen of Mr. Henderson, who is so well qualified to speak on such matters, and in whose remarkably interesting and well-managed establishment in Jersey city, so many young British gardeners have found temporary employment.

POISONING BY MONKSHOOD.

THE *Daily Telegraph* informs us that "hardly a year comes round in which a whole family is not poisoned by the blunder of some crass gardener, who has dug up a root of the deadly monkshood, and given it to the cook as horseradish. To distinguish between the two roots would have puzzled Gerard himself." The *Daily Telegraph* is wrong; no gardener would do anything of the kind. Poisoning people with roots of monkshood may be one of the attributes of the much-sought-for individuals who look after pigs, cows, poultry, horses, &c., and whose main virtue is supposed to be their horticultural skill; but we never met with a trained gardener "crass" enough to make such a mistake. Nor is it difficult to distinguish between the two roots. The monkshood root invariably tapers somewhat like a slender carrot, only in a still more marked degree; while, as everybody knows, the horseradish never does so, but is like a smooth-running stick in outline. Nevertheless the monkshood is a most dangerous plant in a garden, and should never by any chance have a place in or near a kitchen garden, as, unfortunately, too many cases have happened in which persons, not gardeners, and totally ignorant of plants, have gathered it and used it as horseradish.

FLOODS AND CEMETERIES.

THE papers are full of the details of the great floods at Manchester and in the adjacent districts. A large portion of the surface of the country passed in travelling by the Great Northern Railway and its branches through Yorkshire is covered with sheets of water. Great damage to crops has resulted in many districts, besides those in which the floods have been so terribly disastrous. Gardens, both public and private, in the northern districts have suffered much. A most painful feature of the late floods was the uprooting of a cemetery at Manchester, which has been so fully reported in the daily papers. The cemetery question is essentially one for the landscape gardener, and this event should direct his attention to the necessity of so placing and so disposing cemeteries that danger from floods or any similar cause is rendered practically impossible. Cases of negligence or short-sightedness in this way are far too common; and it is only such

appalling cases as that at Manchester gets much talked about. Visitors to the late great Birmingham flower show might have noticed an instance in the Aston Cemetery, close to the ground where the flower show was held. There a wall and much of the earth inside it had fallen away, exposing the coffins along nearly the whole of one side of the ground. If the designers and managers of our cemeteries do not protect us from such scenes, let us hope the question may not be thought beneath the attention of the Government. To lovers of gardening the question is one of peculiar importance, inasmuch as cemeteries properly laid out and planted are, in addition to their other and higher claims to our attention, among the most beautiful of public gardens. We need only instance the Coventry Cemetery, the Dean Cemetery at Edinburgh, and the grand cemeteries in all the great cities of the eastern States of America, which are parks in extent, and flower gardens in keeping and in the beauty and abundance of their shrubs and flowers.

W. R.

MR. AYRTON AND DR. HOOKER.

A MEETING took place on Tuesday last, in Wellington Street, Covent Garden, under the presidency of Mr. Bateman, for the purpose of taking into consideration the present state of affairs at Kew. Resolutions were proposed expressing sympathy with Dr. Hooker, and a committee was formed for the purpose of placing the matter, if possible, upon such a footing that the public interests may not suffer, and that Dr. Hooker may be protected from all unnecessary interference in the performance of his duties. By direction of the committee just alluded to the following memorial was sent to Mr. Gladstone:—

To the Right Hon. W. E. GLADSTONE, M.P., First Lord of the Treasury.

"We the undersigned, being personally interested in botany and horticulture, and conscious how intimately the progress of those branches of knowledge and industry is connected with the proper administration of the Royal Gardens, Kew, and of the museums and herbaria thereto belonging, venture to call your attention to the present unsatisfactory condition of affairs as regards the management of that establishment.

"We respectfully submit that the system of making one official responsible for the conduct of what repairs may be requisite in the apparatus used for heating the houses that contain them, is likely to be in the highest degree detrimental to the public interest, while the harmonious co-operation of the officials engaged, and which is so essential in such a case, can hardly be looked for under such a system.

"We beg leave respectfully to state our opinion that the full control over all details of management, of whatever kind, should be left to the director.

"We venture to suggest that the Board of Works is not the most appropriate body to exercise supervision over such an establishment as Kew, where great scientific interests are at stake, as well as the instruction and recreation of the people.

"We would, therefore, respectfully urge upon you the expediency of placing the directorate of Kew directly under some other department of the Government. And, lastly, we would express our hope that you will be pleased to take such measures as shall in future secure that the director of a large public establishment shall, if for no other reason than the respect due to his office, be treated with fitting consideration.—Signed, on behalf of the meeting,

"JAMES BATEMAN, F.R.S., Chairman.

"MAXWELL T. MASTERS, M.D., F.R.S., Hon. Sec."

The following memorial to the Premier has also been forwarded by the Council of the Royal Horticultural Society:—

"The Council of this Society, being convinced of the admirable manner in which the Royal Gardens at Kew have been conducted for so many years by Dr. Hooker, and of the great benefits to horticulture and botany which have resulted from his highly cultivated scientific attainments, venture to hope that Mr. Gladstone may be able to take such steps as will confirm and uphold Dr. Hooker in his present appointment, and enable him to continue his labours with satisfaction to himself and advantage to the country.

"W. W. SAUNDERS, F.R.S., Chairman."

The Malva Family.—The great beauty of this family is now apparent in some of the collections of herbaceous and alpine plants around London. We allude to such plants as *Sida malvaeflora* and *incarnata*, *Malva Alcea*, *Morenii*, and the British *M. moschata* with its white variety, and the *Lavateras thuringiaca* and *unguiculata*, the latter one of the finest herbaceous plants in flower at the present time, a good specimen of which may be seen at Kew. It grows about six feet high, and has large bright rose-coloured flowers. The flowers of these are generally of a light clear rose colour, and are produced in dense masses, and the plants are hardy and vigorous. They are highly suited for the embellishment of borders and for what is now beginning to be termed the "wild garden."

THE EVENING FETE AT THE BOTANIC GARDENS,
REGENT'S PARK.

BY NOEL HUMPHREYS.

The evening of July 11, 1872, is destined to mark an interesting epoch in the annals of one of the most attractive of our horticultural institutions. Ever since the foundation of the Royal Botanic Society, its beautiful grounds in the Regent's Park have formed one of the favourite resorts of pleasure-lovers during each successive London season. The general flower shows, the Wednesday promenades, and the great annual Rhododendron displays, have for years furnished forth never-failing attractions; but the evening *fête* so successfully carried through last week, has left all other of the occasional festivals of that favourite resort far behind.

Just as the *fête* was about to commence, however, at a few minutes before nine, its success seemed destined to utter annihilation, by the drenching effects of a thunderstorm, for big, heavy drops of warning were rapidly succeeded by a close and continuous fall of soaking rain, during which the earlier arrivals continued without intermission, undismayed by the threatening state of the weather. As the great exhibition tent became filled with visitors, the clattering of the persistent rain was heard beating violently and unceasingly upon the canvas roof, and yet so hopeful was the pleasure-seeking zest of the guests that every one predicted a speedy cessation of the storm, although the flashes of white and vivid lightning above made the lime-lights below seem dull and yellow, and although the threatening notes of heavy thunder drowned those of the military bands. The rain continuing, confined the visitors for a time within the great exhibition tent and conservatory, all the external walks being soaked and sloppy, and the turf reduced to a thick carpet of water-saturated sponge; while the pretty shrubbery walks were in still worse plight, with more than half the coloured lamps extinguished, and the gravel under the refreshment tent had become a mere slosh. But such was the warmth of the air, that after the cessation of the rain, the walks became fit for promenaders, if not over scrupulous, in an incredibly short space of time. Meanwhile, there was much to see in the great exhibition tent, which it was a novelty to see by gaslight. The general effect of the exhibition of flowers and shrubs, as arranged for competition, was from several points of view exceedingly beautiful. The groups of various kinds of ferns, from the most minute and delicate to the most gigantic and robust, produced a very fascinating effect as seen by a bright artificial light; and varied as they were by the majestic foliage of palms, or here and there by a fine specimen of the delicate *Araucaria Ruleii*, or *Cocos Weddelliana*; the whole of the graceful expanse of foliage being enlivened at certain points by noble flowers of *Lilium auratum* rearing themselves in its midst, and at others by a cerulean mass of *Agapanthus*. The scene appeared, in short, absolutely one of enchantment.

One was glad to see, also, the finely-flowered masses of hardy herbaceous perennials, such as the Pentstemons and the Phloxes, and to learn from them what treasures of beauty are at our command for the embellishment of our open gardens, of which, comparatively speaking, we take such small advantage. The collection of Phloxes exhibited by Messrs. Downie, Laird, & Laing, and which took the first prize in its class, was truly magnificent in the gaslight, exhibiting every conceivable tint, from white and pale rose to the deepest tones of crimson, and even an approach to absolute scarlet; all the varieties being as hardy as a daisy or a dandelion. The same advantages in the way of hardihood cannot be claimed for the *Caladiums*, which require the protection of a conservatory, or the fostering heat of a stove; but, as exhibiting the most magnificent display of gorgeous foliage of any class of plants in the whole range of the vegetable kingdom, they never fail to arrest the attention; and when such a collection is brought together beneath the lights of an evening entertainment as that exhibited by Mr. R. Ritchie, who secured a first prize, the admiration of a plant-lover is raised to the highest pitch. Another feature that added materially to the picturesque and beautiful effect of the great tent, was the handsome rustic stand exhibited by Mr. Kepper. It was filled with exquisitely-grown Ferns, *Yuccas*, *Tradescantia zebrina*, and other suitable

plants, so exquisitely grouped and grown that a Van Huysum or a Miss Mutrie might have painted a masterpiece of composition from it without altering the position of a leaf or a line. There was also a special series of objects which commanded very general attention, as being seen to far greater advantage and more legitimately by artificial-light than daylight. I allude to the dinner-table decorations, which I found time to examine with some care, and which will be found described in another place.

Rambling from the great exhibition tent to the conservatory, I found a most charming effect produced by the vivid flame of the lime-light, which, coming from the outside, produced a kind of supernatural, fairy daylight, in which the palms and tree ferns and climbing plants, showing their dark outlines against the vivid external light, defined their endless variety of graceful form with a sharp distinctness that produced a very singular and at the same time beautiful effect. Leaving the conservatory, and going out upon the broad walk, a still more striking effect disclosed itself. The rain had ceased, the gravel was nearly dry, and a crowd of promenaders in evening dress of brilliant colours was moving in different directions, bathed in a luminous flood that was poured forth from the great lime-light above the chief entrance gate and from two others to the right and left, producing a dazzling effect that was at the first glance almost blinding, so much so that many ladies walked with spread fans before their eyes. The colours of the dresses shone out like the gleam of gems, and the gold and silver tissues of the robes of several Indian and Japanese princes added to the splendour of the general effect, which here and there was still further heightened by the unmistakable flash of diamonds, in the shape of tiaras, bracelets, necklaces, and other costly ornaments. No such evening *fête* upon a moderate scale has ever before been given in London with such brilliant success.

The music of many bands, performing simultaneously in various parts of the grounds, produced effects almost as magical as those of the lights. The ear was at one moment filled with one of the fullest and richest of the luscious melodies of Rossini, which, while still falling sweetly on the ear, seemed gradually but rapidly transfused into a crisp German march, which in its turn, after a few steps in advance, blended into a low, swinging waltz, to the metre of which clouds of great moths and other insects were seen whirling and whizzing in mad aerial dances, attracted by the unusual glare of light. The lighting of the magnesium torches at the lake was also a striking feature of the entertainment; now green, now red, now blue. Doubled by their reflections in the water, they formed an extremely picturesque feature, which the balmy softness of the evening enabled the lightest clad of the fair promenaders and sight-seers to enjoy, without the slightest fear of taking cold—though colds were doubtless caught, nevertheless, not singly, or in pairs, but by the score, by those whose feet were shod rather for the ball-room than the garden. As an evening garden party, the whole entertainment was so entirely successful, and so highly satisfactory to all concerned in it, that it will doubtless, we need hardly say, become an annual affair, as the climax of the great horticultural festivities of the season.

Development in Nature and in Man.—I should like to see a man's biography with corrections and emendations by his ghost. We don't know each other's secrets quite so well as we flatter ourselves we do. We don't always know our own secrets as well as we might. You have seen a tree with different grafts upon it, an apple or a pear tree we will say. In the late summer months the fruit on one bough will ripen; I remember just such a tree, and the early ripening fruit was the Jargonelle. By-and-by the fruit of another bough will begin to come into condition; the lovely St. Michael, as I remember, grew on the same stock as the Jargonelle in the tree I am thinking of; and then, when these have all fallen or been gathered, another, we will say the Winter Nelis, has its turn, and so, out of the same juices have come in succession fruits of the most varied aspects and flavours. It is the same thing with ourselves, but it takes us a long while to find it out. The various inherited instincts ripen in succession. You may be nine-tenths paternal at one period of your life, and nine-tenths maternal at another. All at once the traits of some immediate ancestor may come to maturity unexpectedly on one of the branches of your character, just as your features at different periods of your life betray different resemblances to your nearer or more remote relatives.—*Oliver Wendell Holmes.*

THE FLOWER GARDEN.

HONEYSUCKLES.

It is generally supposed that honeysuckles can only be enjoyed by those who have walls. This impression is erroneous, for these universal favourites may be enjoyed by everybody who has any extent of garden at all, though not a foot of wall be near it. Everybody loves honeysuckles; every poet has written of the woodbine; every posy we receive from the country is sure to contain trusses of its flowers; everybody remembers "that lovely cottage" with the woodbine half-choking the doorway, or half-smothering the window. The honeysuckle is not at all an aristocratic plant. The day labourer may have one rambling over his little arbour, and the countess allows another on the summer-house, provided it does not interfere with the "magnolia;" but, on the whole, it is banished from all "fine" gardens. To nail every shoot of it to the wall, with a multitude of nails and red shreds, is like putting a plant in a straight waistcoat. It must have liberty. There are three modes of growing honeysuckles apart from anything like masonry; for as a hedge or bush and a pole or pillar plant it is exceedingly well adapted. Wherever it may be desired to have a hedge of honeysuckle, either for its own sake or as a screen or a division, construct a slight kind of railing or paling, plant the honeysuckles about a yard apart, or less, if you think proper. Planted in good soil, they will grow vigorously, and as they progress they will require training. That is, do not allow half a dozen young shoots to coil themselves into a cable, but guide them, either by tacking or tying, so that the whole of the woodwork may be soon covered. When this is done it will require no further care than to reduce extravagant growths to something like order. Never mind symmetry, and there must be no clipping with shears; let it grow in its own natural way. A hedge of honeysuckle is one of the most beautiful sights in the world. Perhaps the Dutch honeysuckle, with its various tints of blossom (owing to the mutation of colour each blossom undergoes), is the best for this purpose. Bush honeysuckles are charming objects for the fronts of shrubberies, however choice. To form bushes, place three stout stakes triangle-wise at about two feet apart, and from two feet to a yard high. Put out a good plant in the centre, or one at each corner, and as they grow coil the shoots or "bine" round the stakes. They will soon make fine globular bushes, and will, with very little pruning, maintain their shape when the supports are gone. Pillar honeysuckles are very telling objects in the backgrounds of shrubberies and such places. Strong rough poles, from eight to twelve feet high, are placed as supports here and there in the background among shrubs. To these the plants are put; they soon run up to the top, and then fall over in wild bold masses—very beautiful. The trumpet honeysuckles are more delicate in habit, and do best in the most select spots, in the front of choice shrubs, supported with neat stakes from four to five feet high. The *Lonicera flexuosa* or *L. japonica* is evergreen, and has a habit unlike that of any other kind; the delightfully-scented blooms are axillary, in pairs, not terminal, like most others. This is the quickest-growing shrub I am familiar with, running from twelve to twenty feet high in a single season. It will grow (but not flower) in any situation, and is charming for covering unsightly gables and buildings. It will soon cover almost any amount of wall, on which, when covered, the branches should be left to grow naturally. A dead tree, especially one with horizontal branches, produces a fine effect when covered with this kind. Let it be tacked or tied when growing to most of the main branches, and then let it alone; the long flexible shoots will hang to the ground in every direction.—*T. Williams, in "Gardeners' Magazine."*

[In addition to the above desirable positions for these charming plants, they are also seen to great advantage when planted in a semi-wild state, on rough banks and slopes in the larger class of gardens.]

VARIEGATED-LEAVED PLANTS AT BIRMINGHAM.

THE collection of herbaceous plants with finely variegated leaves that interested me most, was that sent by Mr. Ware, of Tottenham. I went again and again to the side of the great tent where these were displayed, wondering each time, more and more, at the ignorance or supineness which prevents us from enriching our gardens with a number of these exquisitely beautiful plants, by means of which such endless variety might be secured to our borders, and the front of our shrubberies; by means of which, with foliage alone, and without the aid of flowers, most charming effects of chaste colour, both light and dark, may be produced. Such, however, is the ingrained conservatism of Englishmen, whether gardeners or politicians, that it will, I fear, be many years before we take the fullest

advantage of the variety and beauty which modern botanical discovery, and modern skill in culture, have placed at our disposal.

Many of the plants exhibited by Mr. Ware, too, were perfectly hardy, an advantage which cannot be too pointedly alluded to. In this collection, for instance, was a variety of the common sage, which, with its mass of gold-edged leaves, would form a very ornamental object, if placed in a situation to contrast strongly with shrubs of deeper toned foliage. The common sage itself, indeed, with its sombre foliage of semi-glaucous green, which is at present banished to the kitchen garden, might often be brought from its exile with advantage, to contrast with the darker or brighter greens of other low-growing plants. Mr. Ware's fine varieties of variegated *Funkia* form fine tufts of peculiarly handsome leaves; *F. undulata*, with its cream-toned leaves just flecked with streaky pencillings of green, being especially remarkable.

As a ground-covering foliage, where a low growth is alone desirable, what can be finer than the variegated Coltsfoot (*Tussilago Farfara*), so finely edged and brightly splashed with white as are some of the best variegated varieties? For spreading over rock-work, in favourable positions, what can be more desirable than *Sedum Sieboldii*, each leaf of delicate pale green blotched with a circlet of soft cream colour in the centre? And, then, the common old-fashioned border flower, *Polemonium carolinum* (Jacob's Ladder, variegated variety), is as pretty and bright an object as can be conceived. Each of its elegant pinnate leaves is edged with a clear sparkling border of white, making the foliage even more attractive than its pretty crown of soft blue flowers.

For fine semi-tropical effect, the noble leaf-blades of the variegated New Zealand flax (*Phormium tenax variegatum*) form a grand addition to *Yuccas* and other stiff-leaved Aloe-like plants. With this, the variegated *Yucca filamentosa* would group admirably. *Scrophularia nodosa*, with its white-bordered leaves and young sprays of golden yellow, is also very pretty; while the leaves of the variegated *Hemerocallis*, an old garden favourite, are so beautifully marked that a plant of it would form a fine object anywhere. There is also the smaller double-flowered variety, the leaves of which are conspicuously streaked with clear white, which would be very attractive wherever there is room for it.

All these, and many other plants with finely variegated foliage, were exhibited by Mr. Ware at Birmingham, each plant being a finely grown specimen; but in consequence of the intricate working of horticultural technicalities, which, as Lord Dundreary once remarked, "No fellow can understand," Mr. Ware was disqualified for competing for the first prize in this class, which he would otherwise most certainly have secured. Other exhibitors also sent fine collections of hardy and half-hardy variegated plants, containing specimens not in Mr. Ware's collection, especially that of Messrs. Bell & Sharp, among whose fine variegated plants I noticed the beautiful *Yucca Stokesii*, with lance-like leaves of the deepest green marked with a rich golden stripe along the centre; and also *Yucca aloifolia*, strikingly streaked with pure white, forming an exceedingly noble and picturesque object; there was also an exquisitely pretty striped grass—the prettiest of all the ribbon grasses—*Dactylis glomerata variegata*, which might be used in small patches with excellent effect in many places requiring sparkling touches of light; in short, Messrs. Bell & Co.'s collection was a very interesting one, but, on the whole, I was most attracted by Mr. Ware's plants.

In the class of shrubs with variegated foliage, I was much pleased with the selection shown by Mr. Standish, of Bagshot. There were several other collections which were probably as complete; but it so happened that the one sent by Mr. Standish fell in my way, and I was much struck by the beautiful character of many of the specimens. Time did not permit me to make any classification, and I find that in my memorandum-book I took the specimens as they came, in the following order, or rather disorder: The first thing that attracted my attention happened to be *Acanthopanax variegata*, forming a very charming little bush of mingled creamy white and pea green. Then came *Coprosma Baueriana*, an elegant shrub with golden-hued leaves of clean and regular form, marked by a spot of bright green in the centre. *Euonymus latifolia* and *E. radicans* are both of them attractive shrubs, and most useful in producing a special kind of effect; the former has leaves of pale cream colour marked very distinctly with two shades of green; some of the leaves remaining entirely cream coloured. The leaves of *E. radicans* are more regularly marked with cream-colour. There were also several other *Euonymus*, all more or less beautiful, as variegated shrubs. The variegated hollies were in endless variety, and no shrub or tree with variegated leaves can surpass this noble family. Golden yews, also, are very valuable, and of these, Mr. Standish showed some remarkably fine specimens.

There were two examples of *Cupressus Lawsoniana variegata*, with parts of the foliage entirely golden, producing at some little distance

off the effect of being covered with masses of rich yellow flowers. The variegated *Eurya latifolia*, with its long pointed leaves of mingled cream, grey, and green, is a very magnificent plant, inviting the attention of all such as wish to make a really grand addition to their shrubberies. Ivies grown as shrubs or standards, especially the variegated Japanese ivy (*Hedera japonica*), were not so fine in Mr. Standish's collection as they were in many others, nor were the variegated hollies; but on the whole his selection was a very noble one.

We have not as yet taken half the advantage which will be eventually derived from the large numbers of fine variegated shrubs which are now at command, both deciduous and evergreen; but the knowledge of them, and with it the taste for their culture, and the true feeling of the various ways in which they may become so immensely valuable in varying the effects, and imparting gradations of light and dark to our shrubberies, is being rapidly developed by such horticultural displays as that which has just taken place at Birmingham.

H. N. H.

A DOUBLE-FLOWERED WISTARIA.

Among the beautiful and rare things sent to America from Japan by Mr. Thomas Hogg, is a double *Wistaria*, which this year bloomed finely in the grounds of his brother, Mr. James



New double-flowered *Wistaria*.

Hogg. Flowers having the form of those of the pea (Papilionaceous, as botanists call them) are so peculiar in their structure that they are beautiful in their normal state, and ordinarily no advantage is gained by doubling them. In double flowers the number of parts is increased in various ways, and in many cases such are more attractive than when

single; but in Papilionaceous flowers the quaint irregularity of the arrangement is broken up, and we have in its place a confused mass of petals without any symmetry. The *Wistarias* are among our most common and valued climbers, and as they are used more for the general effect produced by their bloom than for the beauty of their individual flowers, the doubling in this plant is a manifest advantage. That which in the ordinary varieties is a simple pea-like flower, in the double one becomes a rosette of dark-coloured petals, and a raceme of these is very showy. To avoid answering questions about this *Wistaria*, we may state that the plant will be offered by one of the florists near New York when he shall have propagated a stock of it.—*Hearth and Home*.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Lithospermum prostratum as an edging plant.—One of the most pleasing edgings I have ever seen, is in Mr. Harrison's garden, Bartrops, Weybridge Heath. It was more than a yard wide, neatly spreading, and dotted with flowers. It is growing on a very sandy soil.—W.

The Hardy Palm.—About four miles from here is perhaps one of the finest of specimens of the hardy Chinese Palm, growing in the open ground in the gardens of the Hon. and Rev.—Boscawen, at Bnan Laniorh. I did not measure it, but should think it cannot be less than fifteen or sixteen feet high. This was a female plant, and close by is a specimen of the male, a few feet shorter. Both are now in flower.—J. TYERMAN, *Tregony, Cornwall*.

Lychnis Haageana hybrida.—This is a novel and effective variety of this favourite perennial. Plants of it, six inches in height, are now flowering with me raised from seed sown in a greenhouse on March 22nd, thus making it almost an early annual. The flowers resemble in form those of the *Dianthus chinensis Heddewegii*, and in colour are scarlet, pink, creamy white, and other shades. It is a perfectly hardy plant, and makes a grand border flower the second year.—A. D.

Delphinium nudicaule.—This is undoubtedly an excellent addition to hardy border plants. In *Delphiniums* we have nearly every shade of blue, but the deep rich colour of the old formosum has made that variety first favourite in all gardens. It is indeed a superb blue, and as a June flowering border plant for back rows, cannot be excelled. I have now plants of *D. nudicaule* finely in flower from seed, sown in a cool house in February, and a charming thing it is; although, to do it justice, strong plants are required. The flowers are not so large as those of formosum, but the colour, a bright orange red, is undeniably good.—A.

Phlox Drummondii var. *Cardinal*.—This is the deepest and richest coloured of all this class of *Phloxes*, constituting, when in a mass, a rich glow of deep crimson such as one seldom sees equalled. It occasionally produces flowers of different hues, some of which are heavily shaded with purple. General Grant approaches it somewhat closely in colour, but that variety has more purple in it, and is not so showy. Varieties of *Phlox Drummondii*, to be done well, should be sown in a cool house, and, when the plants are large enough, they should be potted up singly into small sixties. Thus treated they get well rooted, and when planted out soon grow into strong free blooming plants.—D.

Pentstemons.—These make superb border plants, and deserve a greatly increased popularity. The improvement that has taken place in the quality of *Pentstemons* can scarcely be imagined by those who have lost sight of them for the past ten or twelve years. I have now in full flower a large bed containing some two hundred plants of *Pentstemons* raised from seed early in the spring of 1871. They all flowered strongly last autumn, and with scarcely the loss of a plant during the winter. They have now thrown up quantities of young growths that have been all through June, and will probably be all the summer, a mass of flowers. Their colours vary greatly; among them are scarlet, purple, pink, white, and intermediate shades of all kinds; their blooms too, are large in size, and the spikes long.—BENFORD.

INFLUENCE OF PARENTAGE ON FLOWERING PLANTS.

DR. DENNY, in his paper read at Birmingham on this subject, took the popular idea that the male pollen had much more influence than the female parent over the offspring, and spoke as if the raiser of seedling flowers could, with the knowledge now at command, raise his colours and produce new forms with almost the greatest possible certainty. My own experience, which has been pretty extensive, leads me to a very different conclusion. I believe no such rule exists, or if it does, the exceptions are nearly as numerous as cases which follow the rule. Having raised from three to six thousand seedling bedding geraniums per year for the last six or seven years, I was very anxious to see if any rules could be made out, but never could satisfy myself except in the case of variegated, or as they are called tricolor varieties. In raising these, I soon found it was necessary to save seed from green plants, and to use the pollen of the variegated, because seedlings from variegated plants were wanting in constitution; in fact, many of them could not be kept alive. But even in this case there were many exceptions, for I had green plants of great vigour as the result of this cross. Williams's Underwood was thus raised from Mrs. Pollock crossed by Woodwardianum. The seedling plants of this variety grew three feet high the first year, and though much pleased with the flowers, I thought it would be only fit for the back wall of a conservatory, but it proved a good bedder, and after being sold by thousands received a first-class certificate at Chiswick five or six years after it was raised from seed.

Those who think with Dr. Denny may say this is quite according to the rule, but many of the seedlings were almost white, and would not grow at all.

My practice has been to take the various colours, say scarlets, and cross the best habited plants with the best formed flowers, and *vice versa*, and to pick out the best of the seedlings the following year. That this has been very successful all who have seen my seedlings will admit. But last year, hoping to get some new colours, I tried crossing with opposite colours; pink on crimson or scarlet, and again scarlet on crimson or pink. Thinking to prove if there was any truth in the theories propounded, I had every seedling marked with the name of its female parent, and though many have bloomed and been thrown away, there are still perhaps a couple of thousand planted out, each with its name stuck against it. Dr. Irving, of Newark, was with me the other day looking them over, and we very closely examined them to see if any rule could be deduced from them. The peculiar foliage of the pink is well known. Here we have pink foliage with scarlet or crimson flowers, and zonal foliage with pink flowers; some take after the male, some after the female; some after both, and some after neither. The only good I have derived from all the trouble taken is the proof afforded that some kinds are good breeders and some bad ones. So much for Geraniums; now for Vines. I once raised about a hundred seedling vines between the American strawberry grape and several of our hot-house varieties. To those who do not know the strawberry grape, I may say its foliage is quite unlike any oriental variety, being small, seldom larger than a man's hand, very woolly, and almost entire, being nearly heart-shaped. Now all these seedlings had as their female parent the strawberry; the males were, as far as I remember, the Black Hamburg, Royal Muscadine, and Muscat of Alexandria. The foliage of the seedlings varied in a degree that was quite astonishing; some resembled their female parents some were much more like fig leaves than any vine leaf I ever saw before, and they varied in size and colour, as well as in shape. There were some amongst them with wonderfully large leaves, and yet all in some respects showed, in their colour or woolly texture, their hybrid origin. The fruit varied as much as the foliage in every respect, except size, for there was not a large grape among them, and generally, the largest foliage was accompanied by the smallest fruit. The fruit was of every colour known amongst grapes, but with a few exceptions (only two) they were all poor, but not all poor alike. Some were almost as astringent as sloes, some tasted like dirty water, and some were highly perfumed. Now I want to ask, can anyone deduce a rule for breeding from such a case as this? In conclusion, I would say, I think there are a few things we cannot know—the sex of a chicken before it is hatched, the sex of a calf before it is born, or which parents a seedling geranium will take after, though I know there are plenty of people who profess to understand these things.

J. W. PEARSON, *Chilwell*.

THE COMPETITIVE TABLE DECORATIONS AT THE ROYAL BOTANIC GARDENS, BY GASLIGHT.

At the recent horticultural show at Birmingham a darkened tent was prepared expressly for the exhibition of dinner-table decorations, as described in THE GARDEN of the 30th ult.; but at the Botanic Gardens, on the evening of July 11th, the table show was a genuine and legitimate night display. The decorations that obtained the first prize (as already known) were those exhibited by Mr. Buster; and, on the whole, they deserved that distinction. The central object was, as is so frequently the case, the very general tall vase of the trumpet form, at the mouth of which was a very elegant display of grasses, the feathery character of which is daily becoming more fully appreciated for decorative purposes. These were varied by maiden-hair ferns of two or more kinds, as well as by some other slender-growing species, sparingly and lightly used, and relieved only by three or four sprays of a delicate small-flowered white Campanula; while a careless additional grace was added by a trailing spray or two of, I think, *Maurandia*. The base of the tall vase was surrounded by a series of semi-circular glass troughs, which formed a scalloped enclosure. These low troughs were filled with forget-me-nots, mingled with water Ranunculus and a few small ferns, very delicately and neatly used. The two secondary objects consisted of similar vases, of lower proportions, rising from their own low saucers or plateaus, the vases being furnished in a somewhat similar manner to the central one, but yet ingeniously varied; the saucers having sprays of white Campanula rising from ferns, richly but sparingly mingled with roses. The small vases with button-hole bouquets were of the usual character, but very neat and elegant. On the whole, the general refinement of the arrangement of Mr. Buster's decorations was of a marked and very pleasing character.

The table which occupied the next place in excellence, in my estimation, was one decorated by the elegant taste and light artistic hand of Miss E. Harris, to which only a third prize was awarded. I was delighted with Miss Harris's composition; first, because it was not overdone; secondly, because it left broad spaces of the "best damask cloth," which is the greatest and simplest glory of the dinner-table, undisturbed in snowy whiteness by extraneous objects; and, lastly, because the decorations, as thus kept within the strictest bounds of tasteful propriety, were in themselves light and elegant. The grasses and ferns of her principal vases were delicately assorted and displayed, and were simply varied by a few sprays of dwarf white harebell, and one or two other objects as chaste and simple; while in saucers beneath were roses—only a few—nestling among fresh, mossy-looking ferns, and partially concealed by a feathery veil of lacey grass-blossoms. The general effect was full of elegant repose, which should always be aimed at, rather than that fussy, overdone profusion of decoration which is now so often seen.

A table decoration furnished by Miss E. Hassard, which obtained a second prize, was composed of six tall glass vases, from which rose graceful plumes of grasses, almost entirely unaided by the colour of flowers, being only just flecked here and there with a little starry blossom. At the bases were roses, white lilies, and geraniums, within a fringe of ferns. Altogether it was very pretty, and chiefly remarkable for the important part which common field grasses were made to play, with very elegant effect.

The adjoining table had a handsome silver epergne as a central object, well filled with the usual display of ferns, &c., the chief characteristic feature being the surrounding of the central epergne, and also the four corner ones, by favourite glass troughs, of pretty forms; these being filled with the best kinds of variegated geranium leaves, alternating with strongly-marked flowers, such as Pansies, blotched Pelargoniums, and Mimulus, with other kinds of flowers displaying two or more colours. The effect was original and striking, but perhaps wanting in repose. Mr. J. Mortlock's table, the vases and other ornaments of which were entirely of his white Dresden chinaware, must be considered (though well enough embellished with flowers) to be chiefly an exhibition of his elegant ceramic manufactures, which are remarkably well adapted for the successful display of floral decorations on the dinner-table. His gigantic dinner-table vase, furnished with palm leaves and a few large and striking flowers, looked remarkably handsome in the brilliantly lighted tent. Messrs. Daniels' table had a large mirror-plateau for a centre-piece, on which some small china swans looked very pretty with their forms reflected in the simulated lake, round which a border of water lilies did very successful duty. Messrs. Daniels can evidently exhibit very attractive table furniture. Messrs. Gardener's table, with a similar plateau, made much greater pretensions to importance. The swans, of real Dresden, were much larger, and of really artistic character, and instead of being placed on the mirror-lake, appeared as though forcing their way through the sedges and other foliage and flowers with which it was bordered. The vase of flowers rising from the mirror was of the usual kind. In two smaller plateaus of similar character, pretty Carrara groups of Venus and Cupid seemed floating in a graceful cockleshell on the mirror, surrounded by water lilies and suitable foliage. Small corner vases had Japan lilies, ferns, and drooping grasses of the great oat-grass kind, and in their saucers there were white sweet peas and delicate ferns. Altogether it was a very handsome table, but somewhat too profusely covered with decorations, which is a defect easily remedied on a future occasion. Mr. Charles Wood (floral artist) added a special feature to his floral decorations; richly plumaged birds being made to flutter round his table lamps, among the flowers with which they were wreathed; while he had for a centre-piece what he termed a "paradise fountain," the crowning feature of which was a bird of paradise, with spread wings drooping round, like a shower of pale amber, towards the flowers below. Messrs. Ward, also, exhibited "ornithological table decorations," as they style them, in which lovely birds nestled among the flowers in very picturesque fashion. But such novelties are, after all, of very questionable taste, and though pretty, and likely to be fashionable for a time, will scarcely retain a permanent place as legitimate dinner-table decorations. Miss Hassard obtained a prize for a table-decoration in which two large pots of growing ferns were the chief features, though the clay pots were entirely unadorned; for a dinner display such articles of the commonest kind of clay-ware ought surely to be clad in some kind of evening dress. The arrangement of table fruits by Miss Harris looked pretty and tempting in the glare of bright light, and the composition deserved the prize which it obtained. I have thought it worth while to notice these table decorations at some length, because they had previously been criticised by daylight, while their carefully prepared effects are intended to be seen, as a rule, by artificial light only.

H.

GARDEN DESTROYERS.

GEOMETRA (FIDONIA) PINIARIA.

We this week figure the different stages of a moth which has great capabilities of mischief to our young fir plantations. It has not indeed yet been found to be so serious an enemy to them in this country as it is on the Continent; but still it is desirable to point it out to our gardeners and arboriculturists as a species which is to be looked on with a certain amount of suspicion; for, as it is not rare throughout Scotland and England, there seems no reason why, on the occurrence of favouring conditions, it should not develop itself to the same extent as across the channel. We believe it has not yet been recorded as found in Ireland; but this is probably rather due to want of observation than to its actual absence. It occurs all over Europe, and is especially abundant in Germany, where its ravages have been greater than anywhere else. The numbers in which it appears are sometimes very great. Ratzburg notes of one winter that as many as seventeen thousand pupæ had been gathered on a single acre. As



Geometra (Fidonia) Piniaria.

might be expected, when it occurs in such numbers it entirely strips the trees of their leaves, and of course weakens, injures, and sometimes destroys them.

It is the caterpillar that does the actual mischief. It feeds specially on the leaves of the different species of pine, although it has also been found attacking the spruce fir. It prefers the young trees to the older. The caterpillar is of a glaucous green colour, with a whitish stripe up the back, and another less distinct, and slightly bluish-white, along the sides, and a yellowish strip next the abdomen, which is streaked with different shades of green. Although not in itself bearing any resemblance to a pine leaf, its colours harmonize so perfectly with the leaves that it cannot readily be distinguished when feeding upon them.

The chrysalis is dark-brown. The moth is differently coloured in the two sexes, besides the usual distinction of plumose antennæ in the male and filiform antennæ in the female. The male is dark-brown, with yellowish-white patches.

The female is entirely of different shades of brown, and is darker than the male, but the dark shade of brown is not so deep, and the brown redder. In the male the brown is burnt umber; in the female it is umber qualified by burnt sienna. The lighter portions in the female are merely paler than the rest of its colour, but of the same tint. The eggs are oblong, and laid in rows on the leaves of the pine.

The moth appears in April and May, is most frequent in June and rare in July, in which month the caterpillars begin to show themselves. They grow very slowly, and do not go into pupa until October or November. Hence we infer that they have only one brood in the year.

Hand picking, after shaking and heating the caterpillars off the trees, is the remedy that has been recommended; but, as is too often the case with insect ravages, our own efforts at abatement are very feeble, and we are more dependent on the influence of the seasons and the interested labours of their own special enemies than on anything else for any immunity we may enjoy.

A. M.

Sulphozone, a Substitute for Sulphur (see p. 31).— May I be permitted to inquire by what process sulphurous dioxide impregnates pure sulphur? One might as well talk of sand being "impregnated" with a gas. I am astounded at the statement that the insecticide and other properties of powdered sulphur are due to the presence of sulphurous dioxide. Every chemist knows that this powerful acid gas first reddens and then bleaches all vegetable tissues. If any gardener doubts this fact, let him burn a piece of brimstone in a dry atmosphere; the product, which is supposed to be the active agent in powdered sulphur, will bleach any plant introduced into the apartment. I should very much like to know how it is possible that this gas gets into sublimed sulphur. Sulphur must of necessity be sublimed in vessels absolutely free from air, otherwise it would not sublime at all, but be converted into the gas which Mr. Roberts imagines it contains. I need scarcely point out that if any small portion of air were accidentally present it would at once be destroyed by the sulphur, and so prevented acting on any further portion of the subliming body. It is most reasonable to suppose that sulphur acts mechanically and chemically, first, by smothering or irritating animalculæ, for which purpose, of course, sublimed sulphur would be preferable to the same substance in a powdered state; secondly, by the almost imperceptible action of hydric chloride upon it. This acid is always present in rain and moist vapours, and its slow decomposition in presence of the fine particles of sulphur would effectually destroy any animal organism. In Professor Balfour's "Botany" it is stated (p. 147) that "Sulphurous acid gas (SO₂) is highly injurious to plants. It produces greyish-yellow, dry-looking spots on the leaves, which gradually extend until the leaves are destroyed and fall. . . . The proportion of this gas in some experiments was only one in 9,000 or 10,000 parts of the air, and the quantity one-fifth of a cubic inch. And yet the whole unfolded leaves of a mignonette plant were destroyed in forty-eight hours. This proportion of gas is hardly, or not at all, discoverable by the smell." So much for "sulphozone," whatever that may mean.

W. R.

Gooseberry Caterpillar.—There is no occasion for experiencing a single day's annoyance on account of this caterpillar. Water the branches affected, and, while wet, sprinkle some freshly-powdered hellebore over them. In a few minutes the grubs will have made themselves scarce, and will not return.—
BROADLEY HARRISON, *Eynaston, near Ross.*

THE ORIGIN OF THE MOSS ROSE.

(FROM THE GERMAN.)

THE angel of the flowers one day,
Beneath a Rose tree sleeping lay,
That spirit to whose charge 'tis given
To bathe the young buds in dews from heaven.
Awaking from his light repose,
The angel whispered to the Rose,
"For the sweet shade thou'st given to me,
Ask what thou wilt, 'tis granted thee."
The Rose replied, with height'ning glow,
"On me another grace bestow."
The angel paused, in silent thought,
"What grace was there that flower had not."
'Twas but a moment, o'er the Rose
A veil of moss he lightly throws;
And, robed in Nature's simplest weed,
What other flower ean this exceed?

THE GARDEN IN THE HOUSE.

CULTURE OF PLANTS IN ROOMS.

(Continued from p. 5.)

MANURES.

The manuring of pot plants is effected either by mixing solid manure with the soil, or by placing it on the surface, or, lastly, by watering with liquid manure. Solid manures, for mixing, comprise the various composts of stable manure or cow manure in a thoroughly decomposed state, and which may be obtained at the nurseries. Of these, cow manure compost is, for general purposes, to be preferred. It should not be mixed, however, in a greater proportion than from one-tenth to one-fifth of cow-dung in the entire mass. Other stronger materials are horn-shavings, bone-dust, malt-grains, powdered fowl's-dung, &c. Small quantities of these are mixed with the soil for those plants which are known to love strong manure, such as Petunias, Fuchsias, &c. As powerful manure, when mixed with the soil, often produces a very bad result, it will be sufficient, in general, to place it on the surface of the soil in the pot, so that in the course of watering it may be gradually dissolved. Of this class of manures are guano, fowl's-dung, bone-dust, malt-grains, &c. It is much better, in room culture, to use liquid manure, which has this great advantage that it can be given to the plants exactly at the time when they require more nutriment—during the seasons of growth, of bud-forming, and of blooming. On the other hand, during the period of rest, solid rich manure mixed with the soil is less likely to prove injurious, or to render the plants sickly in the winter season. A mild kind of liquid manure, which every house will supply, is the water in which plates, &c., have been washed, and the water in which meat has been washed before cooking. Both of these may be given to the greater number of plants during the whole time of their growth and blooming, if the plants are in a healthy condition.

LIQUID MANURE.

To prepare a strong liquid manure, a tub is filled with water, into which is thrown fresh cow-dung, pigeon's or fowl's dung, blood, scraps of flesh offal, guano, bone-dust, &c., either one or more of these matters being used. To hasten the decomposition of these, some muriatic acid may be added. The vessel should not be covered, but the air should be allowed to have free access to the liquid. It should also be stirred up from time to time. As soon as fermentation sets in, it is ready for use. It should be poured through a sieve into the watering-can, and applied to the plants in the morning and evening. It is advisable to dilute this with more water if it should be too concentrated, as then it is injurious. Experience and observation of its effects will soon teach whether it is too strong or not. Liquid manure such as we have described, if used at the proper time, is one of the best means for securing a luxuriant growth and bloom.

KEEPING THE PLANTS CLEAN.

One of the most unfavourable things to the culture of plants in rooms, and especially in living-rooms, is the dust, which in a short time covers the leaves and, indeed, all parts of the plant above ground. By it the pores of the leaves become choked, and the process of transpiration is either totally stopped or else seriously impeded. The leaves then begin to turn yellow, and, unless the evil is arrested in time, the plant becomes sickly, and at last dies. In order to avoid this, the plants should be cleaned as often as possible with a dry soft cloth or with a wet sponge. The latter, however, should be free from any particles of lime or sand, which would injure the tender skin of the leaves. It is best to give the plants a double cleaning, first with the dry cloth, and then with the moist sponge. A cleaning of this sort is the most complete, and at the same time refreshes the leaves, which so easily suffer from the dry air of the room. If they are merely wiped with the wet sponge, the dust will not be so completely removed and the leaves will not preserve their soft shining green colour, as they would if the dust was first removed by the dry cloth. A trial will prove the truth of this statement. The more frequently the plants are thus cleaned the more

healthy and luxuriant will be their growth. In plants with soft, velvety leaves, and also in such as have leaves and stems covered with a woolly pubescence, it is recommended to remove the dust by means of a fine soft paint-brush. The cleaning of the plants consists not merely in wiping or washing the healthy leaves, but it is also of the highest importance to remove as speedily as possible all dead or decaying foliage. Deciduous plants, and also evergreens with articulated leaves, will either of themselves shed their dead leaves, or when they turn yellow they may be easily plucked off without injury to the branches. In the case of evergreen plants, the leaves of which are firmly attached to the branches, such as Aroids, Scitamineæ, Ferns, Palms, &c., the yellow leaves must be cut off, as by careless plucking them off the stem may be injured. In the case of many evergreens of which entire shoots die off, these must be so cut away with a sharp knife that no stump may remain, and so that the wounds may soon cicatrize.

POTS.

The pots in which plants are grown in rooms should also be kept clean. Even with careful watering, the surplus water will sometimes be allowed to stand in the saucer, and in consequence the outside surface of the pot will become covered with a layer of whitish or greenish matter arising from the growth of mould-fungus or germinating moss. A properly baked pot is very porous, and allows the air to penetrate through it to the roots of the plant, which is absolutely necessary to its proper nourishment and healthy growth. As the dust impedes the transpiration of the leaves, so does the deposition of this whitish or greenish matter on the outside of the pot prevent the air from passing through it into the ball inside. Wherever it occurs, therefore, it should be carefully washed off. Frequent loosening of the surface soil, especially when the plants are watered with liquid manure, and the removal of every weed are, for the same reason, to be recommended.—*Dr. Regel.*

(To be continued.)

LEAVES FOR GARNISHING THE DESSERT.

A RARE old leaf is the ivy, green or golden, for garnishing fruit. And yet its smell is anything but sweet, its taste is rank and poisonous, and it leaves somewhat of both on the fruit it adorns. Therefore, beautiful as the ivy is, it ought not to be brought into contact with fruit. The Portugal or common laurels are much better. Unless bruised, they give out little odour, and no taste. Their size is suitable, and their bright glossy surface cleanly. The colour, especially of the Portugal variety, is a rich dark green, and the forms of both are well adapted for association with dished-up fruit. Hollies, especially the plainer-leaved varieties, form beautiful garniture for desserts, and give out neither smell nor taste. Even the pricklier varieties, both green and variegated, may be turned to useful purpose by using terminal tufts instead of single leaves. These can be handled better, and the little rosettes, set off with prickles as defensive armour, guard the fruit from danger, and force us to handle it with care. Aucuba leaves are very handsome, but they smell rather strong, and many of them are too large, even were we prepared to pluck the leaves of the finer sorts. The common *A. japonica* is the best for this purpose, and, setting aside its smell, is very pretty. The *Berberis Aquifolium* and other species afford the most useful of all leaves for garnishing the dessert. They yield so many leaves of different sizes and colours as to furnish a rich variety; they are also clean and scentless, and fit in well with most fruits. *Rhododendron* leaves are bright and glossy, and look well either singly or in terminal branchlets. *Laurustinus* is clear, bright, shapely, and has a good effect. The *Arbutus* is also clean and pretty, in terminal bunches or single file; and Sweet Bay leaves are light, glossy, and sweet, without, however, flavouring the fruits that rest upon them.

Notwithstanding all this matter of choice, many, however, elect to cushion their fruit on variegated or green kale. It is pretty enough, but both the sight and smell are suggestive (often highly so) of cabbage, which is a somewhat incongruous association with a luscious dessert. All leaves from the outside should be washed and well dried before being used. Frozen leaves will lower the quality of most fruits that touch them, and nothing can be more displeasing than the adorning of choice fruits with imperfect or unclean leaves. Therefore, gather the leaves for the garniture of your dessert early in the morning, sponge them perfectly clean, if not already so, and lay them aside in a temperature 10° or more above freezing, but not

in sunshine; they will then be in a proper state for use when wanted.

Those who grow stove or greenhouse plants in quantity—and especially climbers—or force early fruit and flowers, will hardly ever be scarce of choice leaves for the garnishing of their desserts. And yet it is by no means every pretty or fine leaf that is suitable for this purpose. For instance, the whole family of pelargoniums must be set aside, from their excess of perfume. There are other beautiful leaves, again, that are too thin to go creditably through a dinner without shrivelling up into needless incumbrances of the dessert. Such is to a great extent the case with *Abutilons* of all varieties—very fresh and beautiful, but fragile. The leaves of the variegated and the common form of *Cobæa scandens* have the same failing. Again, there are some of the passion-flowers that give out a disagreeable odour, and some of them, like *P. quadrangularis*, are too large; and *kermesina*, in a young state, is almost too tender. Still, this noble family is rich in leaves for garnishing. *P. alata*, *edulis*, and *racemosa* being among the very best species, are also rich in beautiful leaves; but some are fragile, and those that are suitable have more or less scent. *Camellia* leaves are models of smooth, glossy beauty, but no one cares to gather them for fruit garnishing; while those of oranges, lemons, &c., are too highly perfumed. *Stephanotis* are too leathery, were one inclined to pick them off. The early forcer of fruit and flowers can seldom, however, be at a loss for choice foliage for garnishing desserts. Even common leaves out of season acquire an uncommon beauty. Of course those who have vine leaves need no other; nothing can supersede nor equal them. They are the best of all, from the time the tender picking will barely pass through the dinner till the winter leaves of many colours crumple into a handful of dust in our fingers. Early fig leaves are also admirable. Later in the season they seem too rough and common for choice fruit; but the early leaves have a soft freshness that is most pleasing. Even early peach, plum, pear, apple, and cherry leaves are admirable; while the leaves of forced roses have a cleanly beauty that is seldom seen on those out of doors. The lily of the valley leaf, with a flower or two here and there, gives one of the choicest, sweetest finishes to a dessert, without flavouring the fruit. A fine Czar violet and leaves of the common primrose are by no means to be despised. That most useful of all plants for cutting, the *Astilbe japonica*, yields a harvest of exquisite leaves for the adorning of the dessert. Again, forced lilacs, especially all the varieties of the Persian, are invaluable. Doubtless a considerable proportion of the charm arises from the fact of the leaves being out of season; but they are likewise more beautiful, that is, more fresh and green, when produced under the shelter of glass. It is astonishing how much variety of garniture adds to the interest and beauty of the dessert. And this reminds me of another set of leaves which I have not named, that are amongst the most useful and beautiful of all—those of the strawberry. This fruit never looks so well as when nestling upon its own leaves; and doubtless desserts generally would be far more interesting and beautiful than they are if, as far as practicable, early fruit were adorned with leaves or branchlets of its kind.

BETA.

SHOW OF WINDOW PLANTS AT HULL.

(JULY 6TH.)

No one will, I think, dispute the value of those floral tournaments that were at one time confined to the great metropolis, but which in recent years have been distributed more generally through our great industrial centres. Wide, however, as the basis may be upon which those pyramids of *Flora's* beauties—so often recorded in your pages—are built up, there is still a wider, and if, in extending that basis, we lose in altitude as representing quality, I trust the interest of the "thousands" as compared with the "tens" will amply justify me in asking for space in your well-filled columns, for a brief report of a somewhat modest, though none the less interesting, exhibition held in the Public Park, Hull.

Some six years ago, the Hull Window-Gardening Society was established, its primary object being to encourage a love of flowers among the working population of that town, and with this object in view, its attention and its means (somewhat slender) were first devoted to a distribution of such plants as the possessors of flower gardens in the neighbourhood could contribute, in the autumn; and, secondly, to the awarding of prizes at an exhibition of those plants held during the following summer. This limit as regards the exhibitions was, however, enlarged, for two reasons: the one to extend their interest, the other to increase their popularity; and by this means to include, not only the recipients of plants so distributed, but all those that previously cultivated plants in their windows. So varied are the circumstances under which window plants may be cultivated, bearing in mind aspect, density of buildings externally, or density of population internally, and innumerable other modifying influences, that it was deemed advisable to divide all exhibitors into three groups, classified as

A, B, and C, according as those influences were good, moderately good, or bad. With a view to facilitate those who undertook the "registration" of the plants, a code of instructions was prepared, showing the conditions under which the several letters would be applicable, thus placing each competitor fairly in the field—white against white, green against green, and brown against brown. I have alluded to "registration," and possibly, at the onset, had better explain what is meant by this title.

The value of such an exhibition depends very much on its *bona fide* character, that is, that the plants so exhibited shall have been cultivated in a window during at least a moderate length of time, say six weeks or two months; and to secure this most important point beyond dispute, the services of those persons, who either by position or by inclination were readily enlisted in the furtherance of so good an object, were secured; and these, visiting the proposed competitors, not only inspected the plants, and determined the classes in which they should be exhibited, but, further, by means of small cards, eyelets, and red tape, and the assistance of a pair of nippers, each plant became registered, bearing on the card the number of the exhibitor, and on the sheet in the hands of each registrar was entered the name, residence, and occupation of the owner, as well as any further matters that might be of interest. To quote one return will show the interest and value of such data, viz., "Cultivated by the same person for thirty-five years." A schedule of prizes, about ninety in number, varying from one shilling to six shillings each in value, was prepared, and these were apportioned not only to the A, B, and C groups of registered plants, but also to bouquets of wild flowers, designs in wild flowers, designs in grasses, and collections of wild herbs gathered in the neighbourhood. I omitted to mention that, besides these registered window plants, others who possessed plants, were invited to compete in a class by themselves, and special prizes were awarded to the most meritorious. From this description it may be seen that the prospect of a varied and interesting exhibition was secured, the monotony of the plants being relieved by the beauty and elegance of the designs in grasses.

The show was held in a marquee one hundred and fifty feet long by fifty feet wide, and when I say that the centre stage, consisting of three tiers, was well filled from end to end, two projecting semicircular tables in the centre accommodating the grasses and wild flowers, the reader will readily understand that the competitors must have been numerous. If there was a lack in brilliancy of colour, this deficiency was more than compensated by the variety of objects exhibited; and what a history—what a halo of old associations surrounded many of those plants in the eyes of the exhibitors! It was amusing to see how tenderly they set them down, and how carefully they arranged every leaf. Did time permit me I could give many little episodes that came to my ears on the morning of the exhibition.

The exhibitors on this occasion numbered upwards of 340, of these about one half belonged to the registered classes; and I may here remark that a glance at the three classes as separately staged, gave practical proof of the value of this system of classification. About eighty competitors entered the lists for wild flowers and grasses; these were chiefly children, varying in age from six years old and upwards, and equally various were the designs they produced—from simple, unpretending little bunches, culled from the roadside, to elegant designs of the most elaborate type. Non-registered plants, numbering about two hundred, were exhibited by about fifty competitors, and, thanks to the liberality of some of the tradesmen, many useful and elegant prizes were available; nor were these prizes one whit less miscellaneous than the articles exhibited. At one end of the centre stage a window was fitted up, with a box for the window-ledge outside made to extend beyond the window-jamb one foot on each side. In the extended portion, Ivy was planted and trained up the margin of the window, presenting a very pretty effect. Plants were also arranged in the interior, and a famous plant of the old "Mother of Thousands" (*Linaria cymbalaria*) formed a beautiful object suspended in the centre. This window was fitted up by the Society to show practically what might be done with simple means in the way of decoration. Of course, there was the usual accessory of music; and when I say that as much as £18 was taken at the entrance to the marquee in pennies and twopences, we may roughly estimate the visitors at about two thousand or more, besides the exhibitors, each of whom had a special ticket.

The prizes were distributed from a platform, at the close of the afternoon, and to each prize-winner was also given a copy of instructions on the management of window plants, prepared especially for the purpose, in the form of a small pamphlet. I may add that it is further intended to make a distribution of small plants concomitant with the exhibition another year, so that each exhibitor will receive a plant or two, properly selected and prepared for window culture. This will be substituted for an autumn distribution, which has proved itself, practically speaking, of little value.

I have gone thus far into the details of the above exhibition so as to place before your readers, who may be interested in the window-gardening movement, an outline of the working of our Society. Should any such be wishful to possess the various "forms" that we have adopted, and which have been, of course, considerably modified by experience, we shall have great pleasure in supplying the same.

Hull Botanic Gardens.

JAMES C. NIVEN.

The Avocado Pear.—The correspondent who has recently inquired about the way to raise the seed of this exotic, may be interested to learn that its large seed will grow freely if placed on a hyacinth glass, just as we place a hyacinth bulb, and it may be raised thus in a sitting-room. I had the pleasure of seeing a very healthy plant of it raised thus in Mr. Wilson's dining-room, at Heatherbank, Weybridge Heath. It is yet growing freely in its hyacinth glass, and is about fifteen inches high, and has been in the same position for months past.—W.

SOILS, MANURES, &c.

ARTIFICIAL MANURES AND THEIR ADULTERATION.

PROFESSOR VOELCKER says: You cannot by any inspection recognise whether guano is adulterated or not. I defy, he adds, even an adept in guano to tell me whether this specimen is genuine or otherwise—it is so like the genuine article. Chemical skill is required to effect a detection, but chemical skill can do it. There are, however, one or two things which it may be useful to remember, inasmuch as they will enable people to detect pure Peruvian guano from the adulterated kinds. The best Peruvian guano always has a lighter specific gravity than adulterated kinds. If you weigh a bushel of the genuine stuff, you will find its weight per bushel does exceed sixty-nine pounds. It is usually from sixty-eight pounds to sixty-nine pounds per bushel; that is to say, a bushel measure filled and struck off. Adulterated guano always weighs more. This surely is a simple way of testing the value of guano. Another equally simple way is to burn a small quantity. If you have the appliances to do it by careful weight, take one hundred grains. Should the guano be genuine, it will leave one-third of its weight in ash, which is perfectly white; in other words, sixty-six grains will burn away, and thirty-four will remain in the form I have stated. If the guano be adulterated, it will leave perhaps more than one-half of its weight in ash, and the ash will invariably be coloured, since the earthy matters which are usually employed contain oxide of iron, and that compound causes the ash to be of a brownish or yellow-brown colour. Genuine Peruvian guano yields from sixteen to nineteen per cent. of ammonia. The materials that are mixed with guano are gypsum, chalk, and certain yellowish loams.

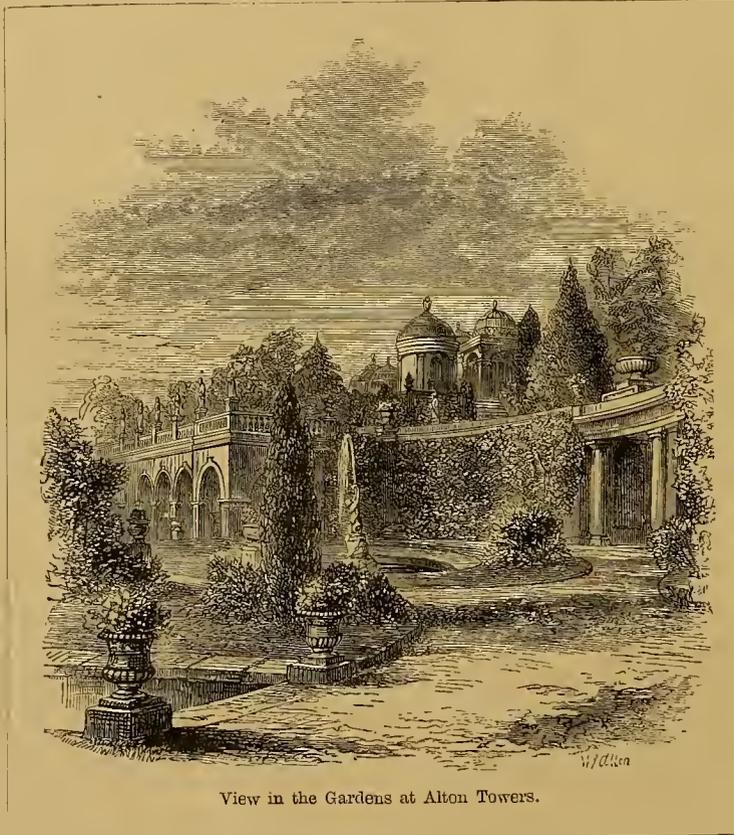
Analyses, I am sorry to say, are frequently made for mere gain; they enable unprincipled dealers to sell spurious articles. It frequently happens that when guanos are offered for sale an analysis is shown with them of a highly recommendatory character; whereas the bulk which is sold to the unwary purchaser is totally different from the sample which was submitted to the analyst's hands. A sample was sent to me, and analysed according to request, and I know positively it was afterwards mixed with a large quantity of yellow sandy loam, and sold by auction as genuine material on the strength of my analysis. It was sold at prices varying from £7 to £9 per ton, and yet it was not worth more than £2 to £3.

Nitrate of soda is frequently mixed with common salt. Sulphate of ammonia is another valuable manure which is occasionally adulterated, the chief adulterating principles being sulphate of magnesia or Epsom salts, sulphate of soda or Glauber salt. Bone-dust is not often adulterated, unless you buy it in a very fine powder, and then you run the risk of getting gypsum mixed with it, or you may possibly get with it vegetable ivory, which resembles fine bone-dust very closely. From a manurial point of view this is not worth anything; but it is good as an adulterating principle, and the button manufacturers of Birmingham will not take less than £2. 10s. or £3 a ton for it. Dissolved bones and superphosphates are sold at high prices, and the prices which you ought to give for this description of artificial manures should be regulated entirely by their quality. You cannot fix one uniform price for superphosphates; everything depends upon the composition. There is only one way of determining their

value, and that is by analysis. The constituents which chiefly regulate the value of this description of fertilizing agent are soluble phosphate, insoluble phosphate, and nitrogen, or ammonia. The more you have of soluble phosphate and bone phosphate and of nitrogen, the better the artificial manure, and, of course, the more you will have to pay for it.

There are some mixed artificial manures the names of which do not exactly indicate their true character. For instance, a good many kinds of manure are sold under the name of blood manures. As a fact, there is very little blood used in the manufacture of manures. Where is all the blood to come from that would make all the manures sold under the name? Some of the manures, nevertheless, are very good—not on account of the blood, but other good things of which they are made. Whilst some refuse materials, as blood, or even woollen refuse, are useful in furnishing nitrogen to the growing plant with sufficient readiness, there are others which do not decompose, and which are only added with the view of deceiving the consumer. Leather, for example, is out of place in manure, even after it is steamed and subjected to the action of sulphuric acid.

To sum up, in buying guano it suffices to have the guarantee of the dealer that the article is Peruvian guano of the best quality. You require no analysis—the guarantee is generally sufficient. In buying nitrate of soda, buy according to the percentage of pure nitrate: in good samples you should get from 94 to 95 per cent. Sulphate of ammonia buy according to the percentage of ammonia: in good commercial samples you ought to get from 22 to 24 per cent. A guarantee that bone-dust is genuine will be quite sufficient. In buying superphosphates the first thing you have to do is to make up your mind as to what you want. Do you require mineral superphosphate or bone manure? According to your requirements let the guarantee be shaped. Mineral superphosphates are useful when the ground is in first-rate order; when it is not too light, or has been manured previously in the autumn, they are very useful, and in buying them all you require is to have the percentage of soluble phosphate guaranteed. If, on the other hand, you buy bone manures, you not only require the percentage of soluble phosphates guaranteed, but also



View in the Gardens at Alton Towers.

that of the insoluble phosphates, and, moreover, a distinct understanding that the insoluble phosphates are present really as bone, and not in the shape of coprolite powder, Estramadura phosphate, or any other description of mineral phosphate.

THE GARDENS OF ENGLAND.

ALTON TOWERS.

AFTER the period of classic order and exactitude alluded to at p. 15, when every tree and branchlet corresponded with its neighbour as much as if it had grown by rule, came the reign of nature, pure and simple. Circumstances, to which it is not needful to advert, gave liberty to the captive trees, loosened them, and let them grow into freer and larger forms. The tree and shrub wealth of the "Enchanted Valley" became too great for its limited area. Classic monuments, pagodas, fountains, Gothic temples, Swiss cottages, Arcaded walls, domed conservatories, all became partially entangled and hidden in a maze-like thicket of choice vegetation.

Rich views were choked up; distant prospects blocked out by impenetrable foregrounds. The gardens were still beautiful, but they could only be seen in detail; and as the trees grow larger, less and less of the narrow valley could be seen from any one spot. In many gardens this is an advantage; the gradual unfolding of beauty makes it last longer and tell better. There are gardens which affect one exactly as a sky-rocket; you enter, and the whole bursts on the eye at once, and then all is over. Such gardens are not satisfying; a reaction sets in. But Alton Towers is an exceptional place. The valley, on each side of which the gardens are laid out, is narrow and delightfully varied. The nature of the ground and style of furnishing, afford a succession of varied scenes, each beautiful and distinct. Architecture, sculpture, classical associations, water, all, to a certain extent, pervade this vale of beauty, and each stamps some particular scene with its own distinctive features. The eye has no time to weary till it is arrested by a fresh object, and there are depths of meaning and of beauty in these gardens which the visitor cannot readily reach.

The woodcuts we now give, and scores more might be given, illustrate and confirm these remarks. Even the same scenes, viewed from different stand-points, seem wholly distinct and different. Almost every part of interest thus serves several distinct purposes. It is beautiful in itself, a unique distinct complete scene, and it likewise forms part of a complete whole. Of late years, the efforts of the present Countess of Talbot and Shrewsbury, and her able gardener, Mr. Rabone, have been specially directed to the creation of wider views of this charming valley. Nature had, in the course of time, overgrown art too much. The difficult problem was to cut out art in due proportion without marring the face of nature. And difficult work it was. Sculpture and architecture need the furnishing and balancing of trees and shrubs, to clothe, as it were, their baldness, and the eye of refined taste soon determines when they have had enough toned down. But to cut out works of art or the beauties of a landscape is a high effort of taste and genius; nevertheless as far as it has proceeded, it seems to have been remarkably well done at Alton.

Several parts of the grounds would bear more cutting. Here and there fine specimens are injuring each other; it is impossible to save all, and some ought to be sacrificed. Again, other features, such as the Swiss cottage, would bear a little more opening up. It would be more effective from the other side of the valley were another tree or two removed; and similar remarks are applicable to other parts of the grounds. The trees must either be kept small or some of them removed, or a tangled thicket, rather than a garden, will be the ultimate result.

Our views give a good representation of the general

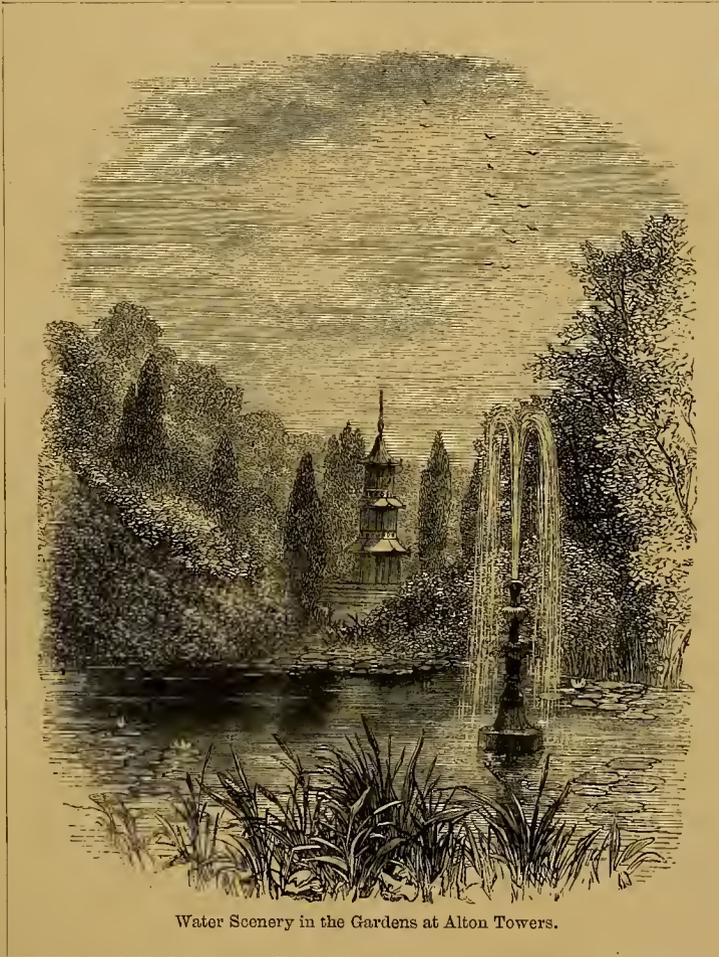
character of the garden. The most notable points, apart from their well-furnished base, covering each side, the bottom, and upper end of a narrow valley, are the architectural ornaments, spiral trees, and water. There is a noble lake near the house, and cascades and fountains all over the grounds. The more permanent among the latter are the Screw, the Pagoda, the Bath, the Dolphin, and the War fountains, the latter so called from the jets of water being sent forth in direct antagonism to each other. Stonehenge, Jacob's Ladder, or Flagstep walks, three hundred yards in length, the domed conservatory, panelled walls, golden, Gothic, and other temples, La Refuge, alcoves, Swiss cottage, statuary, &c., furnish a wealth and variety of architectural adornment rare in gardens of much greater extent. And the style of gardening is most comprehensive, and may be said to include all styles. There are ribbon borders, mixed borders, and beds; sub-tropical, Italian, Dutch, and

common flower gardens in succession; each, as it should be, distinct in itself, and not a medley of all styles in one, which seems the rage in certain quarters, but which is the most monotonous of all modes of furnishing, landing us in a dead sea of mediocrity without a wave of beauty or interest to stir its dull leaden surface. On the contrary, at Alton Towers one bounds along from one distinct scene of interest and beauty to another, without weariness and fatigue, and each fresh garden affects one's spirits like the opening of a new book by a favourite author. The marvel is that so much beauty and interest can be packed into so little space; for, after all, the valley is narrow, and not unlike a huge nut laid open, the inner edges, being packed full of rich vegetation, watered copiously from flowing fountains, and adorned with temples of art, in which the visitor may rest and be thankful.

Mr. Rabone has the difficulties of a public garden to contend with, and the wants of a large private place to supply. He fulfils both duties to

the satisfaction of all. Cut flowers are in great demand at the Towers, and roses, violets, lilies of the valley, orchids, mignonette, &c., are had in quantities throughout the year. A large collection of orchids and stove plants is cultivated, and there is also a splendid display of fine azaleas, camellias, &c.

Fruits of all sorts are also well and extensively grown; and the grapes are so large and fine as to have taken high honours at the show of the Royal Horticultural Society at Birmingham, the other week. A new rosary, consisting of about two thousand plants, has recently been added to the gardens, and altogether, culture and taste and energy are doing their best, not only to maintain, but to extend the fame and the beauty of this charming place. Of Alton Towers, it may be emphatically said, it must be seen to be understood and appreciated. D.



Water Scenery in the Gardens at Alton Towers.

THE FRUIT GARDEN.

THE FUTURE OF OUR FRUIT CROPS.

READ BY GEO. WESTLAND, AT THE BIRMINGHAM CONGRESS.

WITH a rapidly increasing population, the question of our fruit supply becomes important. Fruit, among the working classes, has too long been looked upon as a luxury. A hale and hearty sexagenarian, who for his evening meal was eating a slice of bread and a good-sized apple, remarked—"This, or fruit of some kind, has been my supper from a child, and no man has seen less of the doctor or his medicines than I have." Certainly no one of the age could look better. Some eat daily, as long as they can be had, not less than a pound of strawberries, besides other fruit—and I am glad to know that the habit of eating fruit is rapidly increasing among the higher orders; while our American cousins certainly exceed us as fruit consumers, for there almost anything that has eatable juice in it is pressed into the service. They gloat over a succulent ripe tomato; we most likely should require time to acquire an appreciation of that delicacy. Be that as it may, there can be no question that properly selected fruit is not a luxury, but a necessary of life; and further, the more regularly we use it, the better will it be for us. Well, then, regarding fruit, in its place, to be as much a necessary as bread, the question naturally presents itself, how is the necessary supply to be produced? Already all temperate countries are shorn of their supplies, and still we cry "more, more."

My object is to inquire how more is to be obtained; and looking back to the orchards of the midland and cider counties, and taking into consideration the sackfuls, or even cartloads, of fruit which hundreds of trees individually produce, I ask, is not the dwarfing system, which we have been pursuing for the last quarter of a century, though pretty, so far as it goes, a blunder, as regards the supply of our markets? Fortunately market and commercial growers have not been misled by the pretty deception; they have stuck to the old standard form—guiding, but not restricting, the trees, and they gather fruit accordingly. No scheme has ever led to more disappointment than the pinching and root-pruning systems of cultivation. Such trees make pretty objects in a garden; they are especially pretty when full of fruit, but that is such a rare occurrence as only to be regarded as the exception, not the rule. Such being the fact, it appears that the only sure way to increase our market supplies is to go back to the good old plan of planting orchards, not by scores or hundreds of trees, but by scores or hundreds of acres.

Of the propriety of planting hardy fruits to a large extent there can be no question, so long as the varieties have the qualities of abundant bearing, flavour, and, if necessary, suitability for kitchen use. Take, for example, the Blenheim Orange, Ribston Pippin, Cox's Orange Pippin, and many other apples; they are not only fine dessert fruits, but, once used for a tart, the question soon presents itself from the *chef de cuisine*, Can't we have more? By the same rule, Marie Louise, Beurré Diel, and all the finer dessert pears, are grand for stewing—far superior to the stewing kinds.

I therefore say, plant no inferior fruits, nor any that are not known to be suitable to the locality, unless it be a few odd ones for the sake of trial. Then, even in unfavourable localities for fruit-growing there are certain spots which might be planted with a fair chance of success. Shelter is, of course, a great point; but the shelter of walls is not so good as the shelter of a belt of evergreen trees. On the moors of Yorkshire, for example, or in exposed situations of any kind, where there are no trees to break the force of the wind, a wall is of little more use than no screen at all, for the wind will pass up one side and down the other almost perpendicularly, and bear the plants up at the foot. But with a screen of trees the force is broken, the wind sifted and shorn of its force, and the plants remain comparatively uninjured. Natural shelter should always be taken advantage of when it can be done consistently with other arrangements, and that which protects from the north, north-east, and north-west, is the most desirable. And whatever shelter is provided artificially should be at sufficient distance, so as not to obscure light and sun. Spring frosts are our greatest drawbacks in fruit growing, and therefore the plants when frozen should not be exposed to the morning sun.

These remarks apply more immediately to orchard planting; but still the same rules will obtain in the garden, and the garden will be none the worse for the protection afforded by trees on the exposed sides—and this brings me to that very knotty subject, garden walls. As things of the past, mere protection from the predatory attacks of bipeds, they are well enough. A good wall of peaches, pears, plums, or cherries is a grand sight, but their management is a game of chance, so entirely against the gardener that the question will crop up, is the profit worth the cost? A crop in five years is about the full average from our wall trees, and considering the enormous amount of attention they require, can that be satisfactory or profitable? I think not, at least I confess I am not satisfied, for I think I ought to have more for my trouble.

This, then, brings me to the subject of orchard-houses, and what they are to be. In the formation of a new garden, estimate the cost of walls and of the glass placed against them, and that of building proper houses for the reception of fruit trees of all kinds. Which will be the most profitable investment? While, however, orchard-houses are infinitely superior to walls for fruit culture, let me add that I have no sympathy whatever with the pot culture of hardy fruits. Although I have seen some of the finest crops in the country, I could never see that they could be profitable, the small quantity and inferior quality putting

that out of the question. At the same time, if we look at our old-fashioned peach and other fruit houses, we see plainly enough the result of planting out, and growing what Americans would call true trees. No plant was ever yet dwarfed into what might be called profitable cultivation. The crop may be pleasing enough, very nice from an amateur's point of view, but test it by the gardener's call upon his supplies, or the market grower's return for his produce, and these pot crops sink into insignificance. Proper houses, planted and trained in a proper manner, like our peach-houses or old orchard-houses, must become the most reliable tender fruit-houses of the future. The days for experimenting have passed; the realities of fruit cultivation are perhaps as well known as they ever will be, and certainly they do not favour the pot-growth system. We want, and must have, a positive return for our outlay, and that we shall never get until we allow our indoor fruit trees to develop their full strength, and to take such crops as that strength will carry. If we want to check luxuriance, take the natural remedy of a heavy crop. If we want to augment the strength, reduce the crop below the usual standard. This, I take to be, is the common sense of fruit culture, both present and future.

The Gooseberry as a Pyramid.—Although the naturally low-spreading and spine-guarded gooseberry is rarely seen as a tapering pyramid, it may be grown in that way so as to look much more attractive than in its ordinary state, and its fruit may be gathered, without stooping, as conveniently as that of an espalier pear or apple tree. This, to a lover of the fruit, is some little consideration. We have recently seen a garden with several of its walks bordered by very pretty specimens of erect gooseberries and standard red currant trees alternated, the gooseberries simply tied to a slender iron stake rising about seven feet above the surface of the ground, and pruned so as to gradually diminish from base to top to a mere point. The base of each cone was about fifteen inches in diameter, and the whole perfectly furnished with fruiting spurs. Summer pinching of the shoots is practised to prevent the plants getting out of shape, and also to induce fruitfulness, and they are neatly pruned in winter. The kind best suited to this work is the rough red; it seems to make the handsomest pyramids, and is also a very desirable kind for eating or preserving.

Preserving Grapes in Bottles of Water.—I first tried this plan of keeping grapes on a small scale, in the winter of 1868-69, and succeeded beyond my expectations. During the ensuing summer I therefore had a room specially fitted up for this kind of work; it is twelve feet long and nine feet wide, with three tiers of shelves along two sides and one end, and will hold 130 bottles in all. These bottles have been annually filled since then about the beginning of November with Hamburgs, and all are used by or soon after Christmas. The room is then cleaned, the water changed, and Lady Downe's is then made to occupy the bottles. My experience of four seasons of this mode of treating grapes is, that with half the attention which they require when hanging on the vines, they may be kept perfectly sound; nor does the flavour deteriorate in the least. I exhibited at South Kensington, on March 15th last year, three bunches of Lady Downe's, that had been cut for several weeks; their appearance was all that could be desired, and their flavour excellent. Indeed, my employer, who is no bad judge in such matters, declares that in the matter of flavour there is no deterioration whatever. This year I cut on January 4th more than eighty bunches of Lady Downe's; of these, the last was used on May 23rd, the vines from which they had been cut being then again in full flower. In short, I am so satisfied with the system, especially as regards late grapes, that I last year planted a house, fifty feet long, entirely with Lady Downe's, intending to cut and bottle them about the beginning of each year. This will obviate very early forcing, and secure the possession of grapes all the year round. To those who object to Lady Downe's, I would say ripen thoroughly, and ever afterwards there will be no cause for complaint. The great advantage secured by the bottling system, is, that the vines are at rest, and the house at liberty for plants, which, with the bedding-out mania still in full force, is what we want.—W. WILDSMITH, *Heckfield, Winchfield, Hants.*

Nathaniel Hawthorne on Fruit Trees.—Apple trees and all fruit trees have a domestic character which brings them into relationship with man. They have lost in a great measure the wild nature of the forest tree, and have grown humanised by receiving the care of man, and by contributing to his wants. They have become a part of the family, and their individual characters are as well understood and appreciated as those of the human members. One tree is harsh and crabbed, another mild; one is churlish and illiberal, another exhausts itself with its free-hearted bounties. Even the shapes of apple trees have great individuality, into such strange postures do they put themselves, and thrust their contorted branches so grotesquely in all directions. And when they have stood around a house for many years, and held converse with successive dynasties of occupants, and gladdened their hearts so often in the fruitful autumn, then it would seem almost sacrilege to cut them down.

THE KITCHEN GARDEN.

PRIZE ESSAY ON THE POTATO.

BY GEORGE MAW, F.S.A., G.S., L.S.

(Continued from p. 26.)

EXPERIMENTS ON THE POTATO-CROP.

2. As to the influence on the crop of the distance at which the sets are planted; or the results of close and wide planting of various sized sets.

To establish this point, I shall compare, separately, each series of experiments on potatoes of the same weight, planted at different distances:—

Averages of 1 oz. Sets.

	Gross.			Net.		
	tons.	cwts.	qrs. lbs.	tons.	cwts.	qrs. lbs.
13 varieties, planted 1 foot apart ...	10	9	3 17	9	17	3 0
11 " " 9 inches apart ...	10	12	0 23	9	16	0 0
11 " " 6 inches apart ...	13	4	1 20	12	0	0 13

Averages of 2 oz. Sets.

	Gross.			Net.		
	tons.	cwts.	qrs. lbs.	tons.	cwts.	qrs. lbs.
13 varieties, planted 1 foot apart ...	12	15	2 4	11	11	1 7
12 " " 9 inches apart ...	15	15	2 11	13	10	0 21
10 " " 6 inches apart ...	15	19	0 12	13	10	1 27

Averages of 4 oz. Sets.

	Gross.			Net.		
	tons.	cwts.	qrs. lbs.	tons.	cwts.	qrs. lbs.
12 varieties, planted 1 foot apart ...	15	17	2 15½	13	9	0 2½
16 " " 9 inches apart ...	17	17	3 12	14	13	0 4
3 " " 6 inches apart ...	22	0	2 3	17	3	1 5

Averages of 4 oz. Sets (similar varieties).

	Gross.			Net.		
	tons.	cwts.	qrs. lbs.	tons.	cwts.	qrs. lbs.
3 varieties, planted 1 foot apart ...	15	8	3 24	13	0	1 11
3 " " 9 inches apart ...	15	19	2 14	12	14	3 6
3 " " 6 inches apart ...	22	0	2 3	17	3	1 5

These comparisons all show an advantage in planting the smaller sets at intervals closer than twelve inches in the rows; but the results are not very decided, and in one or two cases the gain in the gross crop does not make up for the extra weight of the sets planted.

The following comparisons refer to the effect of planting the sets more than a foot apart in the rows.

Three experiments averaged together, viz. :—

8 oz. "Flukes," 6 oz. "Flukes," and 4 oz. "Late Red," gave a gross crop of 23 tons 16 cwts. 1 qr. 8 lbs., and a net average of 20 tons 3 cwts. 1 qr. 17 lbs. The same sizes and varieties, planted at intervals in the rows of 1 foot 3 inches, produced a gross crop of 18 tons 13 cwts. 1 qr. 2 lbs., and a net crop of 15 tons 14 cwts. 3 qrs. 20 lbs.—a falling off of 4 tons 8 cwts. 1 qr. 25 lbs. per acre. Indeed the produce of each set was, as nearly as possible, the same, whether planted a foot apart or 15 inches, so that the additional distance was so much loss to the crop. The average produce of 6 oz. and 8 oz. Flukes shows a similar falling off when planted more than a foot apart in the rows:—

	tons.	cwts.	qrs.	lbs.
Flukes, at 1 foot, the net average produce was ...	17	10	1	25 per acre.
Flukes, at 1 foot 3 inches " " ...	15	8	2	6 " "
Flukes, at 1 foot 6 inches " " ...	12	16	0	5 " "

This diminution of the crop, through reducing the number of the sets per acre, is remarkably uniform, and as nearly as possible proportionate to the distance at which the sets are planted.

The general tenor of these experiments points to an interval of ten or twelve inches in the rows, as being the most profitable distance at which to plant large full-sized potatoes, of from four to eight ounces in weight. A moderate increase in the net-crop may be expected from still further diminishing the distance when the sets are below four ounces in weight; but this point will be again referred to in considering

3. The comparative results obtained from planting equal weights of large and small potatoes respectively.

In the previous series of comparisons (1) the advantage of large over small sets, placed at similar distances, was very striking, large sets producing a much greater crop than an equal number of small sets on the same area, and the crop bearing a very regular proportion to the weight of the individual sets. We have now to ascertain whether by diminishing the distance and increasing the number of small sets an equivalent can be obtained for the increased individual productiveness of larger sets.

1 ton 4 cwts. 1 qr. 6 lbs. of sets per acre, planted as—

	Per Acre.		
	tons.	cwts.	qrs. lbs.
2 oz. sets, 1 foot apart, gave, on a number of experiments, a net average produce of ...	11	11	1 7
And as 1 oz. sets, 6 inches apart ...	12	0	0 13

Balance in favour of small sets at close intervals of 0 8 3 6

2 tons 8 cwts. 2 qrs. 13 lbs. weight of sets per acre, averaging a number of experiments, planted—

	Per Acre.		
	tons.	cwts.	qrs. lbs.
As 4 oz. sets, 1 foot apart, produced a net return of ...	13	9	0 2½
As 2 oz. sets, 6 inches apart ...	13	10	1 27

Balance in favour of small sets at close intervals of 0 1 1 24½

4 tons 17 cwts. 26 lbs. planted—

	Per Acre.		
	tons.	cwts.	qrs. lbs.
As 8 oz. sets, 1 foot apart, produced a net return of ...	18	11	0 16
As 4 oz. sets, 6 inches apart ...	17	3	1 5

Balance in favour of large sets at wide intervals of 1 7 3 11

3 tons 4 cwts. 3 qrs. 8 lbs. weight of Fluke sets per acre, planted—

	Per Acre.		
	tons.	cwts.	qrs. lbs.
As 8 oz. sets, 1 foot 6 inches apart, produced a net return of ...	12	3	0 9
As 4 oz. sets, 9 inches apart ...	13	4	2 6

Balance in favour of small sets at close intervals of ... 1 1 1 25

These balances are so small, that they can scarcely be relied on as indicating any decided advantage in either direction; but the nearly equal results of the experiments point conclusively to the fact of the very regular ratio borne between the weights of the crop and the weights per acre of the sets, a ton of sets, whether planted as large or small potatoes, producing the same weight of crop per acre. It must, however, be observed that, *practically*, the principle is only of limited application. Taking 1 foot as the maximum, and 6 inches as the minimum distance between the sets in the rows, it will be easily understood that a weight of small sets, say of 1 or 2 ozs., equivalent to large sets of 6 or 8 ozs., could not be got into the ground, therefore the general principle, that the crop varies as the weight of the sets, weight for weight, is not practically applicable where the sets differ in weight beyond the proportion of 1 to 2. Small sets, therefore, of 1 to 3 ozs., can, under no arrangement, produce as much per acre as sets of from 4 to 8 ozs.

4. As to the relative advantages of cut and whole sets.

A comparison may be instituted between the average results of five experiments with sets formed by dividing large potatoes, and five experiments with old potatoes weighing the same as the cut half sets.

Cut Potatoes.

	Net Balances.		
	tons.	cwts.	qrs. lbs.
Flukes 4 ozs., cut out of 8 oz. potatoes, 1 foot apart, produced ...	12	2	0 23
Flukes 4 ozs., cut out of 8 oz. potatoes, 9 inches apart, produced ...	14	10	2 4
Flukes 2 ozs., cut out of 4 oz. potatoes, 1 foot apart, produced ...	10	4	0 21
Flukes 2 ozs., cut out of 4 oz. potatoes, 9 inches apart, produced ...	11	13	1 12
Flukes 2 ozs., cut out of 4 oz. potatoes, 6 inches apart, produced ...	8	6	2 1
Late Red, 2 ozs., cut out of 4 oz. potatoes, 1 foot apart, produced ...	23	7	1 0
Aggregate on six acres of ...	89	4	0 5
Average per acre ...	13	7	1 10

Whole Potatoes.

	Net Balances.		
	tons.	cwts.	qrs. lbs.
Flukes, 4 oz. sets, 1 foot apart, produced ...	13	3	3 23
Flukes, 4 oz. sets, 9 inches apart, produced ...	13	4	2 6
Flukes, 2 oz. sets, 1 foot apart, produced ...	7	5	0 27
Flukes, 2 oz. sets, 9 inches apart, produced ...	5	12	3 17
Flukes, 2 oz. sets, 6 inches apart, produced ...	7	10	2 23
Late Red, 2 oz. sets, 1 foot apart, produced ...	30	15	2 26½
Aggregate on six acres of ...	77	13	0 10½
Average per acre ...	12	18	3 11

Showing an average balance in favour of the cut sets over an equal weight per acre of whole sets of about 8½ cwts. per acre.

In another instance—

	tons. cwts. qrs. lbs.		
Flukes, 3 oz. sets, cut out of 6 oz. sets, 9 inches apart, gave ...	14	8	1 23
And Flukes, 6 oz., uncut, planted 1 foot 6 inches apart ...	13	9	0 1

Showing a net balance in favour of the cut sets of ... 0 19 1 22

Both these comparative series indicate a slight advantage in favour of the cut sets; but since the individual experiments do not all point in the same direction, the result of the series cannot be looked upon as at all decisive; but it rather tends to the conclusion previously indicated, that the *weight per acre* of the sets planted has more to do with the produce of the crop than any other circumstance.

5. As to the influence of thick and thin planting, and of the size of the set on the proportion borne between the weight of the

sets and their individual produce, and the rate of increase under various conditions.

This subject presents itself under yet another aspect, which interests the physiologist rather than the farmer, viz., the proportion borne between the weight of the sets and the weight of the crop, or, in other words, the rate of increase. This rate, as was to be expected, is larger as the sets are smaller and as the distance is greater, up to one foot apart, beyond which space no perceptible change takes place.

On the general average of these experiments—

The 1 oz. sets increased	...	...	...	...	14.24 fold
The 2 oz. "	...	...	...	...	8.77 "
The 4 oz. "	...	...	...	...	5.87 "
The 6 oz. "	...	...	...	...	5.81 "
The 8 oz. "	...	...	...	...	4.83 "
At 1 foot interval, the 1 oz., 2 oz., and 4 oz. sets increased	...	...	...	...	11.50 "
At 9 inches	...	...	...	...	9.64 "
At 6 inches	...	...	...	...	7.73 "

The rate of progression was found to be very regular, both in individual experiments, and in average results.

6. As to the relative productiveness of different varieties of the Potato.

To avoid undue complication, the varieties employed in these experiments have been rather limited, and the question of their relative productiveness has only been a matter of secondary importance. As, however, several of the varieties are very generally cultivated, it may be well briefly to state the results.

The average produce of 1 oz., 2oz., and 4 oz. sets planted 1 foot apart in the rows was as follows on the gross crop per acre:—

	tons.	cwts.	qrs.	lbs.
Late Red	27 10 3 8½
Spencer's King of Flukes	19 13 2 17
Second's Kidney	16 0 3 12
Daintree's Seedling	15 8 1 25
Queen of Flukes	15 3 0 7
Flour-ball	14 2 1 23
"Vite-lots" (French Kidney)	13 6 3 19
Flukes	10 0 1 19
Early Handsworth	6 18 1 23
Early Prolific Kidney	4 14 1 18

The average produce of four series of experiments, viz., 1 oz. and 2 oz. planted at 9-inch intervals, and 1 oz. and 2 oz. at 6 inch intervals, stand in the following order:—

	tons.	cwts.	qrs.	lbs.
Late Red	27 9 1 20½
Spencer's King of Flukes	24 4 2 24
Daintree's Seedling	15 13 0 0
Flour-ball	14 18 3 20
Queen of Flukes	14 15 3 11½
Second's Kidney	14 9 3 3
Lapstones	11 4 3 5
Early Handsworth	7 14 2 17
Flukes	7 6 0 3
Lemon Kidney	7 4 1 20
Early Prolific Kidney	6 12 2 18

The crops produced from 6 oz. sets planted 1 foot apart, stand in the following order of productiveness:—

	tons.	cwts.	qrs.	lbs.
Late Red	37 18 3 0
Spencer's King of Flukes	30 19 3 12
Second's Kidney	26 8 2 22
Daintree's Seedling	25 16 2 5
Flukes	22 1 0 21
Early Handsworth	13 16 2 0
"Vite-lots" (French Kidney)	13 8 1 8
Lapstones	11 19 0 3
Early Prolific Kidney	7 9 3 17

Of "The Queen of Flukes" and "Flour-ball," there were no experiments with 6 oz. sets.

The relative productiveness of the several varieties grown from 8 oz. sets, planted at intervals of 12 inches, stand thus:—

	tons.	cwts.	qrs.	lbs.
Late Red	38 19 2 25
Spencer's King of Flukes	34 0 2 14
Queen of Flukes	30 5 2 9
Flukes	21 9 3 19
Lapstones	4 17 0 26
Early Prolific Kidney	3 15 1 11

The above four series of comparisons are tolerably uniform, as expressing the relative productiveness of the varieties they include. The actual order of precedence of some of the individual varieties, that do not differ much in their produce, varies a little; but the relative positions are in general uniform; the late red in each set of experiments produced the heaviest crop; and the Early Prolific Kidney appears in every case at the bottom of the list.

Of the three varieties of Fluke, the greater productiveness of both Spencer's King and the Queen of Flukes, than that of the ordinary variety, is very noticeable; Spencer's King especially, throughout the series, producing from half as much more to twice as much as the Common Fluke, not only in the general averages, but in all the individual experiments.

(To be continued.)

The Culture of Spinach.—To Mr. Barnes's admirable article on this subject I should like to append a caution about New Zealand spinach. Certainly it is not to be compared for tenderness and sweetness with the common round spinach, and in some establishments the New Zealand will not be eaten at all. Where it is liked it is, however, a great boon to the gardener, as the warmer and drier the weather the faster it grows, affording any number of pickings without fear of exhaustion or bolting. The spinach Beet is likewise an acquired taste, somewhat different from that of common spinach, but often preferred, when the taste gets accustomed to it. No one, however, need be without spinach all the year round who are careful to carry out the full and practical instructions set forth by Mr. Barnes at page 40, vol. ii. Perhaps no vegetable suffers or gains more in the cooking and dressing than spinach, and the reason why it is not more popular in small gardens, is doubtless that it is mostly badly cooked and served. Perhaps some of the *chefs* of the kitchen will kindly report on a few of the best methods of preparing spinach for table.—D. T. F.

Advertising Cabbage Seeds.—The description which you have given in THE GARDEN (p. 26, vol. ii.) of a French banker betting to raise a large sum by liberally advertising cabbage seed of a mammoth-headed variety, has been rivalled in this country. Some thirty-six or thirty-seven years ago, a Cesarean cow cabbage was advertised to be sent out from a shop in London, at the modest price of one shilling per seed. This cabbage was described as growing to the size of a little tree; and the sale of the seeds, from being advertised in all the newspapers of the day, must have brought in a large sum to the fortunate vender. When I first came to Welbeck I was surprised to see this so-called monstrous cabbage growing in quantities in pots in the greenhouse, and my predecessor had likewise struck a quantity of cuttings from the plants, on purpose to have as many as possible to plant out in the spring, as they were expected to keep a large dairy of milk cows in green food in the winter. The result was, after all the expense of the seed, and trouble in cultivating the plants, that this mammoth cabbage turned out to be the Jersey cow cabbage, the sort of the branches of which they make walking-sticks in that island. The demand for this cabbage seed was so great when it was first advertised that the stock soon got exhausted, and to send a few seeds of it in a letter to friends at a distance was considered a real service.—WILLIAM TILLERY.

Killing Weeds on Walks (see p. 598).—At this place we have about a mile of gravel walks which had been "hand-picked" for several years, the consequence was, the gravel never set into a hard even surface, and of course was never pleasant to walk upon. Weeds, too, never grow upon a solid walk so plentifully as upon a loose one; we therefore gave up hand-picking, and applied clean agricultural salt for two seasons. The result is, not a weed in a hundred yards; the walks are hard and smooth, and never looked so well before. I admit that sometimes the grass at the edges suffers, but this is owing to heavy rains dashing the salt on to the grass. This may be remedied by taking a fine rosed watering pot and just dissolving the salt with water near the edges of the walks. The cost of salt is not near so much as that of hand-picking.—DAVID WALKER, *Dunortan, Tunbridge Wells.*

PUBLIC GARDENS.

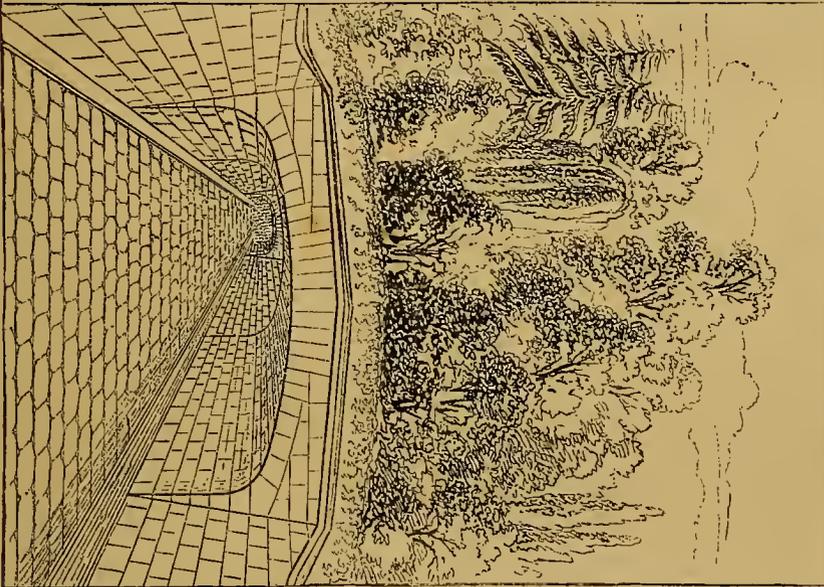
THE CENTRAL PARK, NEW YORK.

WE this week terminate our notices of this noble park, by giving its plan on a very much reduced scale, in consequence of the peculiar shape of the park; a view of one of the transverse roads which pass under the park from one side to the other; a plan of one of the rocky lawns, which we thought such attractive features; and also one of the chief pieces of artificial water, and of the boldly-designed main entrance. The transverse roads are particularly worthy of notice as a good contrivance to prevent the quiet of the park being destroyed by traffic. The many tortuous walks near the lake are those of the "Ramble," a densely-wooded and wild plantation, full of wild flowers in spring and early summer. The want of openness shown in it is the result of design, and good design. The fine broad character of one of the main entrances and its surroundings will be seen from our engraving in another page.

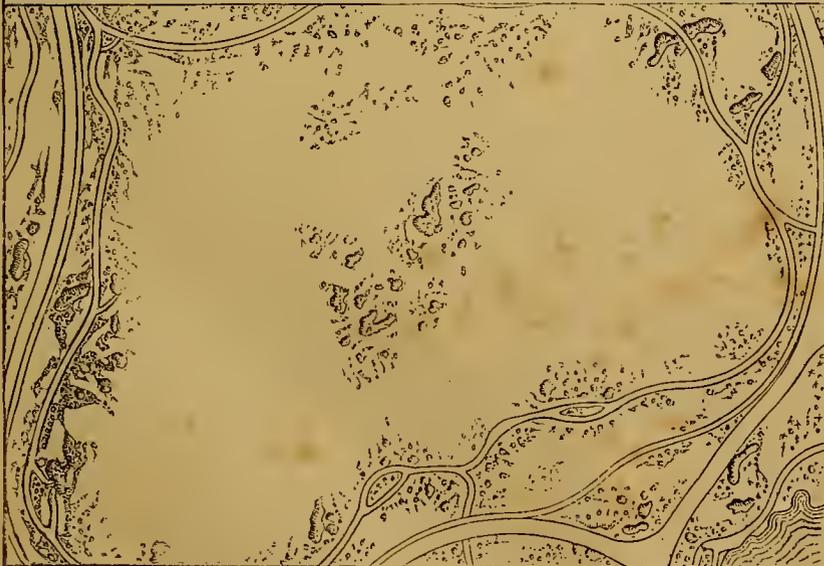
It is necessary to point out that the formal outlines of the great reservoirs which supply the city were one of the many difficulties which had to be overcome by the designer. They as yet disfigure the plan, but the park and its drives and walks are so disposed that the reservoirs are not an eyesore to the visitor. We trust and believe that this noble park is but an example of what every great city in America will one day possess.



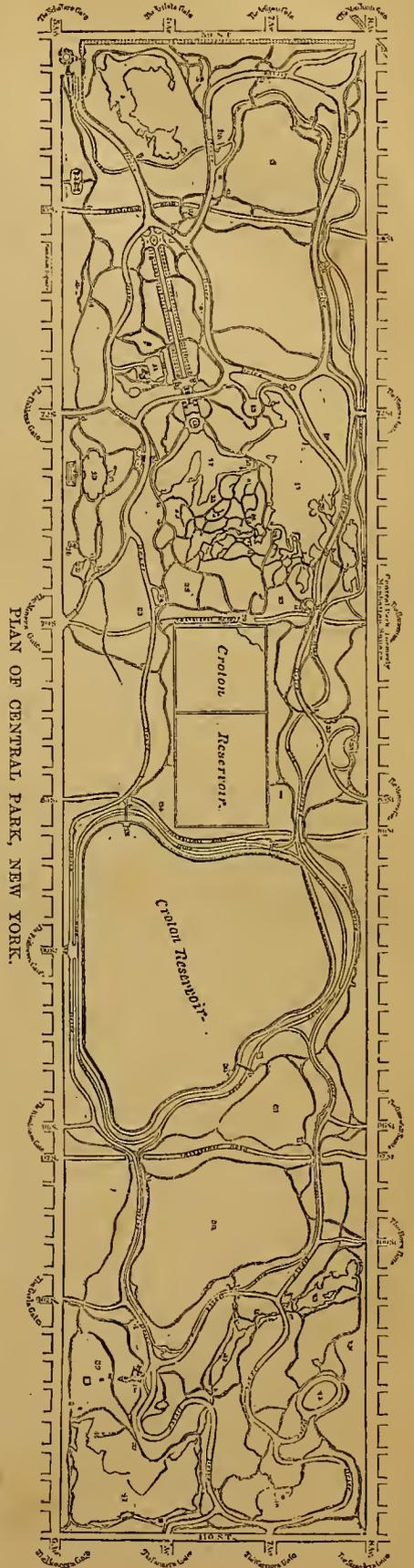
Lake and Ramble.



Arched Roadway under Central Park.



Lawn, with Groups of Natural Rock.



PLAN OF CENTRAL PARK, NEW YORK.

KEW GARDENS.

MR. AYRTON AND DR. HOOKER.

A LEARNED judge once likened a brother on the bench who was remarkable for the rude energy with which he tore through his work, to a rhinoceros in a sugar plantation. There would appear to be a good deal of the rhinoceros in Mr. Ayrton's style of doing business. From the glimpses we get of him in the course of the official controversies in which he is perpetually embroiled, he would seem to be always rushing about madly, tearing up the ground with his horn, dashing himself against trees and palisades, and occasionally, by way of personal diversion, ripping up some unfortunate man of art or science who has got in his way. In the last year or two we have had more than one opportunity of seeing the "Noble Savage" on the rampage, but the spectacle, though enlivening perhaps for those who like these exhibitions of wild fury, is not exactly a pleasant one. It is an unequal contest to begin with. The victims chosen for attack have clearly no chance in an encounter with their hard-borned, pachydermatous assailant. They have feelings, and he has none. They are poor sensitive creatures who wince under any disparagement of their profession as much as under personal insult; and they are doubly outraged when their art and themselves are simultaneously degraded. It may be a nice question why architects, artists, and people of that sort should consider themselves gentlemen, and expect to be treated as such; but they have at least been accustomed to this treatment; and the first shock of being addressed in the fashion in which a navy "ganger" usually communicates with his subordinates is apt to be too much for them. The Chief Commissioner is protected by the consciousness of his own moral superiority against whatever remonstrance or reprobation may be excited by his conduct. It is true his victims might meet him with his own weapons. They might address him in the same style as that in which he addresses others; but even if he were sensitive to this kind of retaliation, he is preserved from it by the self-respect of his antagonists. It would appear that Mr. Ayrton has made it his mission to put down artistic and scientific pretensions. He loses no opportunity of screwing, brow-beating, and bullying architects, painters, sculptors, and gardeners, and making them know their proper places. Last year he was running a-muck among the architects. Now it is the turn of the gardeners. A curious story is told in a memorial which has just been addressed to the First Lord of the Treasury complaining of the usage to which Dr. Hooker, the Director of Kew Gardens, has been subjected by Mr. Ayrton. It is possible that there may be some misapprehension as to the facts of the case, and official explanations, when we get them, may throw new light upon it. But the statements in the memorial appear to be based on official correspondence, and the names which are attached to it, including those of Sir Charles Lyell, Mr. Charles Darwin, Sir James Paget, Professors Huxley and Tyndall, and the Presidents of the Royal Institution, the College of Physicians, the College of Surgeons, and the Geographical and Linnæan Societies, invest it with authority. It can scarcely be necessary to remark that one story is good until another is told, and that the memorial gives us only one side of the controversy between the First Commissioner and Dr. Hooker. We have yet to learn what Mr. Ayrton has to say for himself, and it is possible that on some of the points which have been raised there is room for argument. But the argument must not be allowed to take too wide a range. Whether it is or is not desirable that Dr. Hooker should exercise supreme and undivided authority over the establishments at Kew is a question which may be conveniently postponed. The most serious part of the accusation against Mr. Ayrton is, as it seems to us, not that he superseded Dr. Hooker in some of the duties he had previously discharged as director, but that he superseded him in a grossly offensive and insulting manner, without complaint and without notice, so that Dr. Hooker had not only no opportunity of justifying himself, but was left to discover his supersession casually from one of his own subordinates. We have here a simple question of fact, as to which there should be no beating about the bush. Either Dr. Hooker was superseded in the way he alleges, or he was not. If he was not, he must be the victim of an extraordinary hallucination; if he was, there can only be one opinion as to the First Commissioner's conduct. It is intolerable that the head of a great public department should be exposed to this kind of petty spitefulness and boorish insolence. We hope that Mr. Ayrton will be able to refute the charge, but it is impossible not to have a painful recollection of other incidents of a too similar kind which have distinguished his not very glorious career at the Board of Works. We have no desire to re-open the Barry controversy, but it will be remembered as a conspicuous example of our Edile's unhappy manners, or rather want of manners. There is a kind of surly gruffness which in the vulgar mind is apt to be associated with honesty, if not deemed an indispensable ingredient of it. Mr. Ayrton

perhaps aspires to be known in history as "Honest Ayrton," and if rudeness and honesty are synonymous he may be acknowledged to have fairly earned the coveted appellation. It is obvious that a man must be of a very superior moral constitution to his fellows when he disdains the weak dissimulation of calling a vault a crypt, and exercises his ingenuity in inventing impertinent answers to the simplest questions which are addressed to him on matters of business in the House of Commons. Should the statements in the memorial prove to be correct—and, as we have said, nothing can be easier than to ascertain this—it will be the duty of the House of Commons, if the Government declines to take the initiative, to make Mr. Ayrton understand in some very sharp and decisive manner that it is not part of the duty of a Parliamentary official to treat the permanent advisers of his department with "personal contumely" and studied insult, and to neutralise their efforts by intriguing against them behind their backs, and inciting their subordinates to disregard their authority. Every one must admire the indomitable austerity and persistent insolence of Mr. Ayrton's demeanour, on which the softening influences of official life have produced no effect whatever; but perhaps this kind of heroism will be more admirable elsewhere than on the Treasury bench.—*Saturday Review*.—[Lord Derby has, we see, given notice that he will bring this matter before the House of Lords next Monday.]

THE INDOOR GARDEN.

CAPE HEATHS AND THEIR CULTURE.

A COLLECTION of heaths is always about the last addition that is made to any establishment, when they are favoured with a place at all; but it is seldom they are, either in the form of a collection or as an addition to the decorative portion of conservatory plants. And yet it is not denied that the beauty and loveliness of some of the varieties, not to speak of their great usefulness as pot plants and for cutting, more than surpasses many of the most popular greenhouse plants now in cultivation. An impression exists in the minds of many that they are difficult to manage, and no doubt this is one reason why the heath does not enter more largely into the ordinary conservatory stock. Where large collections are kept as a matter of convenience, they generally receive the special attention they require; but there is nothing at all difficult or particular about their culture to deter anyone from growing a few of the best spring and autumn flowering varieties, according to their requirements, more than the *cucuraria*, the *fuchsia*, or the *chrysanthemum*, and many other things that are considered indispensable for the conservatory. I shall name a few of the most useful kinds; but those who contemplate adding a collection of heaths to their stock would do well to visit some good nursery in their neighbourhood at different seasons of the year, but particularly in the autumn, winter, and spring months, and select for themselves, when the plants are in flower, the varieties likely to suit their purpose. Small, useful plants, furnished with flowers, are now to be had cheap—cheaper, indeed, than many of the common bedding plants and other things that glut the market nowadays. What are called soft-wooded heaths are the easiest cultivated, and amongst them are to be found the gayest and most useful kinds. *Erica hyemalis* is one of the best known and most popular kinds; it throws up its graceful pyramidal flower spikes in abundance, never fails to flower, and with a little management may be had in bloom from January to June. Something like *hyemalis*, but of a more slender habit, and with flowers of a more delicate tint, is *E. Willmoreana*, which should be in every collection. Then there are *E. gracilis*, *Cavendishii*, *colorans*, *florida*, and all the *ventricosa* class, which are not surpassed by any variety for freedom of habit and showiness. These are all soft-wooded kinds, and amongst the best of that class, and will in themselves afford a display for six months. Of hard-wooded varieties, *E. aristata*, *aristata major*, *Marnockiana*, *Aitoniana*, *Aitoniana Turnbullii*, *ampullacea major*, *Bowieana*, *vestita alba*, *v. coccinea*, *v. rosea*, *v. elegans*, are good and well-known kinds, blooming mostly after midsummer and in autumn: but all the hard-wooded varieties require more attention than the others, and they are more formal in habit, and less accommodating for cutting and furnishing, than the others. Therefore, except where a collection is the object, we do not counsel anyone to invest largely in them.

It is, I think, unnecessary to say anything about the propagation of the heath. Amateurs seldom raise their own stock, for it is cheaper to buy established plants. Supposing, therefore, that we have got a lot of plants in four and five inch pots to begin with, that are generally getting out of bloom about the beginning of summer, or later, they should, in the case of such kinds as *hyemalis*, *gracilis*,

Willmoreana, ventricosa, and all such free-growing kinds, be shorn clean over with a pair of shears, clearing away entirely all straggling growths, and reducing the plants to something like symmetry. If the plants appear pot-bound, they will also require a shift at this stage. The best soil for the heath is good pure peat; if it does not naturally contain sand, it should be mixed with about one-quarter of its bulk of good silver sand. A pot that will allow about half an inch of fresh soil round the ball of the plant will be large enough in the case of moderate-sized plants, at least; and the pots must be well drained with an inch or two of clean crocks, which must be covered with a layer of moss, to prevent the soil working down among them and choking them. In potting, turn the plants carefully out of the pot, remove the old crocks, clean the surface of the ball, and loosen the matted roots

The space will serve as a kind of measure, and save repeated and frequent waterings, and prevent uncertainty in the matter. After the plants have been potted they should be plunged in ashes in a cold frame; there is no place better for them than this, and the frame should be set facing the north, and the plants must be shaded from the hot sun with a thin shading. Care in watering will also be necessary at all times, so that the roots are never allowed to get too dry, nor get wet, and liberal dewings in the afternoons, during hot weather, will be highly beneficial; but nothing like shutting up or forcing must be practised with them. Shading may be gradually discontinued, and more air given, till at the end of two or three weeks the lights may be taken off the frame altogether for the season. All soft-wooded heaths succeed best in every way when grown out of doors in summer.



One of the Entrances to the Central Park, New York.

around the sides carefully with the point of a label. This is an operation that must be performed fearlessly if the roots are much matted, so as to liberate them entirely. It is of little or no use potting a plant in a pot-bound condition, as it will be long before it takes to the fresh soil, which will part from the ball years after if taken out of the pot, leaving it much in the same condition it was when first potted. When the plant is ready for the pot, put as much soil into the latter as (when beaten pretty hard) will raise the surface of the ball to within from $\frac{1}{2}$ inch to 2 inches from the rim of pot; then fill in round the sides with the compost, and ram firmly with the broad end of a label, as the work proceeds, until the pot is filled up level with the surface of the ball. The advantage of keeping the surface of the soil an inch or more below the rim of the pot will be discovered when the plants have to be watered frequently in dry weather.

This is a well-established fact, and the frame treatment is only recommended for a short while with newly potted plants. The plants should be housed some time in September, or before frost catches them. They should have the lightest, airiest, and driest place in the conservatory, and during winter and spring they will more than repay the attention bestowed upon them. The hard-wooded kinds require exactly the same treatment as the soft-wooded ones, only that they must not be cut back; and they succeed better when grown indoors all the year round. Mildew is the only evil to be feared in the way of parasites, and is very destructive to the foliage when it gets the mastery; but timely dustings with flowers of sulphur will always arrest its progress. It is not to be feared, however, except in a close and muggy atmosphere. In conclusion, I would state that the clipping over after flowering of the

soft-wooded heaths, as I have recommended, is not absolutely necessary, nor always practised; but it is the way to secure a well-furnished plant, plenty of bloom, and it saves staking, which should never be tolerated except in the case of some of the straggling hard-wooded varieties.—J. S. W., in "Field."

A REVISION OF THE GENUS DRACÆNA.

BY DR. REGEL.

(Concluded from p. 33.)

DOUBTFUL SPECIES.

<i>Dracæna acuminata</i> (Thbg.)	<i>Dracæna hemichrysa</i> (Thbg.)
<i>aurantiaca</i> (Wall.)	Heyniana (Wall.)
<i>elliptica</i> (Thbg.)	Jackiana (Wall.)
<i>ensata</i> (Thbg.)	juncea (Thbg.)
<i>gracilis</i> (Wall.)	obliqua (Thbg.)
<i>graminifolia</i> (L.)	

SPECIES EXCLUDED, AND PLACED IN THE ANNEXED GENERA.

<i>Dracæna albicans</i> Veitch Cat.	= <i>Cordyline terminalis</i> Knth. var.
<i>angusta</i> Bull Cat.	= ditto
<i>atropurpurea</i> Roxb.	= ditto
<i>australis</i> Forst.	= <i>Cordyline australis</i> Endl.
<i>borealis</i> Ait.	= <i>Dianella ensifolia</i> Redouté
<i>Boscii</i> H. Cels.	= <i>Agave geminiflora</i> Gawl.
<i>brasiliensis</i> Hort.	= <i>Cordyline Eschscholtziana</i> Mart.
<i>Banksi</i> Hort.	= <i>Cordyline Banksi</i> Rgl.
<i>californica</i> Hort.	= <i>Yucca conspicua</i> Haw.
<i>cannæfolia</i> Hort.	= <i>Cordyline cannæfolia</i> R. Br.
<i>Chelsoni</i> Veitch Cat.	= <i>Cordyline terminalis</i> Knth. var.
<i>concinna</i> Bull. Cat.	= ditto
<i>congesta</i> Sweet	= <i>Cordyline congesta</i> Endl.
<i>Cooperi</i> Hort.	= <i>Cordyline terminalis</i> Knth. var.
<i>Ehrenbergii</i> Hort.	= <i>Yucca conspicua</i> Haw.
<i>ensifolia</i> L.	= <i>Dianella ensifolia</i> Redouté
<i>erythrorachis</i> Hort.	= <i>Cordyline Banksi</i> Rgl.
<i>erecta</i> L.	= <i>Myrsiphyllum erectum</i> Schlech.
<i>esculenta</i> Hort.	= <i>Cordyline Eschscholtziana</i> Mart.
<i>excelesa</i> Bull Cat.	= <i>Cordyline terminalis</i> Knth. var.
<i>ferrea</i> L.	= ditto
<i>filiformis</i> Thbg.	= <i>Ophiopogon spicatus</i> Gawl.
<i>filiformis</i> Bory.	= <i>Cohnia parviflora</i> Knth.
<i>Frutelmanni</i> Hort.	= <i>Yucca conspicua</i> Haw.
<i>grandis</i> Hort.	= <i>Cordyline terminalis</i> Knth. var.
<i>Guilfoylei</i> Veitch Cat.	= ditto
<i>hirsuta</i> Thbg.	= <i>Dianella triandra</i> Afz.
<i>Höibrenkiana</i> Hort.	= <i>Cordyline congesta</i> Endl.
<i>indivisa</i> Hort.	= <i>Cordyline calocoma</i> Wendl.
<i>indivisa</i> Forst.	= <i>Cordyline indivisa</i> Knth.
<i>indivisa vera</i> Hort.	= ditto
<i>Lenneana</i>	= <i>Yucca conspicua</i> Hort.
<i>limbata</i> Hort.	= <i>Cordyline terminalis</i> Knth. var.
<i>longifolia</i> Hort.	= <i>Cordyline spectabilis</i> Knth.
<i>Macleayi</i> Veitch Cat.	= <i>Cordyline terminalis</i> Knth. var.
<i>mauritanica</i> Willd.	= <i>Cohnia macrophylla</i> Knth.
<i>mauritanica</i> Lam.	= <i>Dianella mauritanica</i> Blume
<i>medeoloides</i> L.	= <i>Myrsiphyllum asparagoides</i> Willd.
<i>Mooreana</i> Veitch Cat. and	
Illustr. Hort. t. 532.	= <i>Cordyline terminalis</i> Knth. var.
<i>nigro-rubra</i> Veitch Cat.	= ditto
<i>nigrescens</i> Hort.	= ditto
<i>nobilis</i> Hort.	= <i>Cordyline nobilis</i> C. Koch.
<i>obtecta</i> Grah.	= <i>Cordyline australis</i> Endl.
<i>paniculata</i> h. Berol.	= <i>Cordyline congesta</i> Endl.
<i>parviflora</i> Willd.	= <i>Dasyllirion Humboldtii</i> Knth.
<i>pendula</i> Hort.	= <i>Cordyline terminalis</i> Knth. var.
<i>pulchella</i> Bull Cat.	= ditto
<i>Regina</i> Veitch	= <i>Cordyline Regina</i> Veitch
<i>sealandica</i> Hoibr.	= <i>Cordyline congesta</i> Endl.
<i>siamensis</i> Hort.	= <i>Cordyline terminalis</i> Knth. var.
<i>spectabilis</i> Bull Cat.	= ditto
<i>spectabilis</i> Hort.	= <i>Cordyline congesta</i> Endl.
<i>striata</i> L.	= <i>Myrsiphyllum striatum</i> Schlech.
<i>striata</i> Sims	= <i>Cordyline striata</i> Endl.
<i>striata</i> H. Van Houttei	= <i>Cordyline terminalis</i> Knth. var.
<i>striata</i> H. Berol.	= <i>Cordyline spectabilis</i> Knth.
<i>terminalis</i> L.	= <i>Cordyline terminalis</i> Knth.
<i>terminalis</i> Lindl.	= <i>Cordyline Eschscholtziana</i> Mart.
<i>undulata</i> L.	= <i>Myrsiphyllum undulatum</i> Schlech.
<i>Veitchii</i> Hort.	= <i>Cordyline calocoma</i> Wendl.
<i>volubilis</i> L.	= <i>Myrsiphyllum angustifolium</i> Willd.

Fuchsia Avalanche.—Two double-flowering Fuchsias bear this name—the one having a carmine tube and sepals and a dark plum-violet corolla; the other having a bright scarlet tube and sepals and a white corolla. Of the first of these some capital specimens may be seen at the gardens of the Royal Horticultural Society, at Chiswick; the foliage has quite a yellow tint, and the habit of the plant is very elegant, the branches drooping gracefully—this characteristic, in all probability suggested the name "avalanche." The flowers are very large and of fine form, and, whether used as an exhibition plant or for the purposes of house decoration, it cannot fail to be much regarded. It appears, also, to be a good free-blooming variety.—R. D.

THE HOUSEHOLD.

THE HEDGEHOG (OR SPINE-BEARING) MUSHROOM.

(HYDNUM REPANDUM.)

THERE is no possibility of mistaking this mushroom: when once seen it is always to be remembered. Its awl-shaped spines are crowded beneath the pileus; its size and colour are most marked; it resembles closely a lightly-baked cracknel biscuit in colour. "This fungus," says Badham, "occurs principally in woods, and especially in those of pine and oak; sometimes solitary, but more frequently in company and in rings."

Pileus smooth, irregular in shape, depressed in centre, more or less lobed, and generally placed irregularly on the stem



Spine-bearing Mushroom (*Hydnum repandum*). Woods, autumn; colour, pale buff; diameter, 2 to 5 inches.

(eccentric); of a pale buff or cinnamon colour; from two to five inches in diameter. Flesh firm and white; when bruised it turns slightly brown. Spines crowded, awl-shaped, slanting, soft, and brittle, varying in size and length, and of a faint cinnamon tint. Stem white, short, solid, crooked, and often lateral.

Opinions on the Merits of *Hydnum repandum* as an Edible Fungus.

"When well stewed it is an excellent dish, with a slight flavour of oysters. It makes also a very good *purée*."—*Dr. Badham*.

"A most excellent fungus, but it requires a little caution in preparation for the table. It should be previously steeped in hot water and well drained in a cloth; in which case there is certainly not a more excellent fungus."—*Berkeley*.

"A wholesome fungus and not to be despised; but not in the first class as to flavour, requiring the help of condiments. It has the advantage, however, of growing later than most funguses, and may be found up to the middle of November."—*Edwin Lees*.

"One of the most excellent fungi that grows; its flavour very strongly resembles oysters."—*Rev. W. Houghton*.

Modes of Cooking *Hydnum repandum*.

The hedgehog mushroom is dense in structure, and in whatever way it may be cooked, all authorities agree that it must be done slowly at a low temperature until it is tender, and with plenty of stock or white sauce to supply its deficiency in moisture.

Stewed *Hydnum*.—"Cut the mushroom in pieces and steep for twenty minutes in warm water; then place in a pan with butter, pepper, salt, and parsley; add beef or other gravy, and simmer for an hour."—*Trans. from M. Roques*.

"Stew in a brown or white sauce."—*Mrs. Hussey*.

"Cut up in bits about the size of a bean, and stew in white sauce, when it will almost pass off as oyster sauce."—*Rev. W. Houghton, F.L.S.*

HARDY PLANTS IN FLOWER ROUND LONDON.

(FROM JULY 11TH TO JULY 17TH, INCLUSIVE.)

BY OUR OWN REPORTERS.

<i>Acacia</i> <i>microphylla</i>	<i>Dianthus</i> <i>superbus</i>	<i>Linaria</i> <i>villosa</i>	<i>Scutellaria</i> <i>serrata</i>
<i>Acautholimon</i> <i>venustum</i>	<i>Diascia</i> <i>macrophylla</i>	<i>Lysimachia</i> <i>Ephemerum</i>	<i>Securigera</i> <i>securidaca</i>
<i>Astroemeria</i> <i>Pelegrina</i>	<i>Donia</i> <i>serrulata</i>	<i>Lythrum</i> <i>alatum</i>	<i>Sedum</i> <i>Anacamperos</i>
<i>tricolor</i>	<i>Echinops</i> <i>sphaerocephalus</i>	<i>virgatum</i>	<i>hybridum</i>
<i>Alyssum</i> <i>deutatum</i>	<i>Echium</i> <i>vulgare</i>	<i>Magnolia</i> <i>grandiflora</i>	<i>kamtschaticum</i>
<i>Amberboa</i> <i>auricata</i>	<i>Epilobium</i> <i>hirsutum</i>	<i>Malope</i> <i>trifida</i>	<i>sexfidum</i>
<i>Amellus</i> <i>anuus</i>	<i>Epipactis</i> <i>palustris</i>	<i>Malva</i> <i>Tournefortiana</i>	<i>Sempervivum</i> <i>glaucum</i>
<i>Androsace</i> <i>lauginosa</i>	<i>Eryngium</i> <i>Bourgati</i>	<i>Matthiola</i> <i>tricuspidata</i>	<i>Pitomi</i> <i>Senecio</i>
<i>Aster</i> <i>blaudus</i>	<i>campestris</i>	<i>Michauxia</i> <i>campanuloides</i>	<i>adoniifolia</i>
<i>corymbosus</i>	<i>Erysimum</i> <i>arkansanum</i>	<i>Micromeria</i> <i>Juliana</i>	<i>Doria</i> <i>Seseli</i>
<i>patens</i>	<i>Peroffskianum</i>	<i>Monarda</i> <i>purpurea</i>	<i>elatum</i>
<i>præcox</i>	<i>Gilia</i> <i>dianthoides</i>	<i>Oenothera</i> <i>missouriensis</i>	<i>Silaus</i> <i>tenifolius</i>
<i>rigidus</i>	<i>Gladolus</i> <i>Sandersii</i>	<i>stricta</i>	<i>Solidago</i> <i>arguta</i>
<i>Barkhausia</i> <i>rubra</i>	<i>Gmelina</i> <i>hirsuta</i>	<i>Oenothera</i> <i>missouriensis</i>	<i>patula</i>
<i>Calluna</i> <i>vulgaris</i>	<i>Heliclysum</i> <i>rhytidolepis</i>	<i>stricta</i>	<i>Spiraea</i> <i>canescens</i>
<i>Campanula</i> <i>Lorcyi</i>	<i>Hemerocallis</i> <i>Thuurberti</i>	<i>Oenothera</i> <i>arachnoidea</i>	<i>Staiice</i> <i>auriculata</i>
<i>primulasfolia</i>	<i>Hypericum</i> <i>nummularium</i>	<i>Papaver</i> <i>medicinale</i>	<i>ensipica</i>
<i>Cannabis</i> <i>sativa</i>	<i>Kanlioides</i> <i>ameloides</i>	<i>Pascalca</i> <i>glauca</i>	<i>incana</i>
<i>Chrysium</i> <i>canum</i>	<i>Lathyrus</i> <i>tuberosus</i>	<i>Phlomis</i> <i>pungens</i>	<i>Limonium</i> <i>reticulata</i>
<i>Clematis</i> <i>aogustifolia</i>	<i>Lavatera</i> <i>trimestris</i>	<i>Physostegia</i> <i>imbricata</i>	<i>speciosa</i>
<i>Collomia</i> <i>coccinea</i>	<i>Leptosiphon</i> <i>roseus</i>	<i>Prenanthes</i> <i>quinatus</i>	<i>Thymus</i> <i>angustifolius</i>
<i>linearis</i>	<i>Lilium</i> <i>canadense</i>	<i>viridicus</i>	<i>thuriferus</i>
<i>Convolvulus</i> <i>Soldanella</i>	<i>Linaria</i> <i>bipartita</i>	<i>Primula</i> <i>auriculata</i>	<i>zygis</i>
<i>Commelina</i> <i>caelestis</i>	<i>Linaria</i> <i>dalmatica</i>	<i>minima</i>	<i>Tradescantia</i> <i>stricta</i>
<i>Coreopsis</i> <i>coronata</i>	<i>italica</i>	<i>Prunella</i> <i>pennsylvanica</i>	<i>subaspera</i>
<i>diversifolia</i>	<i>repens</i>	<i>Rudbeckia</i> <i>digitata</i>	<i>undata</i>
<i>Cynoglossum</i> <i>Heynii</i>	<i>saxatilis</i>	<i>Sambucus</i> <i>canadensis</i>	<i>Verbascum</i> <i>nigrum</i>
<i>officinale</i>		<i>Saponaria</i> <i>officinalis</i>	<i>Veronica</i> <i>incisa</i>
<i>Cytisus</i> <i>heterophyllus</i>		<i>Scabiosa</i> <i>parnasias</i>	<i>virginica</i>
<i>Datisca</i> <i>canadina</i>		<i>Scutellaria</i> <i>altaica</i>	<i>Villarsia</i> <i>nymphæoides</i>
<i>Delphinium</i> <i>Staphysagria</i>			<i>Vincetoxicum</i> <i>japonicum</i>

— GREEN APRICOTS, about the size of glass marbles, sell, it is reported, in the market at the African diamond fields for eight shillings per hundred.

— THE beautiful sheet of water and waterfall at Astle Park, Chelford, Cheshire, last week, were entirely swept away by a flood, the foundations having been previously injured by a storm of the 19th June.

— ACANTHOLIMON VENUSTUM, a rare plant of the Thrift family, is at present in flower in the Royal Gardens at Kew. It produces a longer spike of bloom than the well-known *A. glumaceum*, and has flowers of a deeper shade of rose.

— ON Saturday afternoon last the Marquis and Marchioness of Westminster entertained about 800 guests at a garden fête in the beautiful grounds at Cliveden, near Maidenhead, upon the occasion of the twentieth anniversary of their wedding-day.

— THE beautiful Himalayan *Cyananthus lobatus* is now in flower at the Exotic Nurseries, Tooting; where also may be seen blooming the rare *Hypericum nummularium*, a dwarf species about three inches high, which produces a profusion of yellow flowers.

— THE cotton plants in the hothouse near the entrance to the International Exhibition from Prince Albert Road, are ripening their seeds, and disclose the fleecy pods of cotton, which are the successors to the yellow flowers of the plant; and the growth of some twenty Egyptian, American, and Indian varieties may be examined.

— NORTHUMBERLAND HOUSE is about to come down, and a new street from Charing Cross to the Thames Embankment is to take its place. This certainly will be an improvement, and one long needed. In purchasing the privilege of removing this structure, the Metropolitan Board of Works will have to hand over to the Duke of Northumberland the sum of £489,500.

— AT Messrs. Veitch's nursery at Chelsea, the beautiful *Cianthus Dampieri*, planted out on a piece of rockwork in the open air, is in a most flourishing condition, and producing flower-spikes freely. This plant treated as a tender annual, and planted out in the end of June, is one of the finest objects imaginable, though seldom seen growing out of doors in England.

— AMONG the most beautiful plants in Covent Garden now are neat specimens of *Rhodanthe Manglesii*, which, we are glad to see, has become very popular as a market plant this season. The plants in Covent Garden are from spring-sown seeds; but the best way to raise fine specimens is to sow in August or September, and to grow the plants on through the winter in a cool airy hoase.

— THE Epping Forest Commissioners met the other day and immediately afterwards proceeded to perambulate the boundaries of such portions of the unenclosed waste lauds and inclosures as are within, or in the vicinity of, the manors of Epping, Nazing, and Theydon Bois. This perambulation was made for the purposes of the Epping Forest Act of 1871.

— THE orchards in Surrey and adjoining counties present an unfavourable appearance this summer. Many apple trees are quite without fruit, and others will produce a short crop. Pears make a better show, although the crops are partial. Carrants are scarce, especially red and white. Damson trees at present look promising for a yield of fruit, and there is a good show of nuts and filberts.

— ON Monday last the Society for Promoting the Culture of Flowers among the Poor of Lambeth, of which the Archbishop of Canterbury is president, held its second annual flower show in the grounds of Lambeth Palace. The show was a great advance upon its predecessor, and the various districts of St. Philip, St. Mary, St. Mary-the-Less, St. Anne, and St. Peter's, Vauxhall, were well represented. The Archbishop visited the show during the day, and expressed his approbation. In the evening the prizes were distributed by Mrs. Tate. The gardens adjoining the Palace were also thrown open, and enlivened by means of a band of music.

— THERE is now in flower at Slough, round about and over the top of a little cottage-door, a mass of a large, bright purple-flowered *Clematis* (*C. Jackmanni*), which forms a display as gorgeous as any that the gardens, or even the hothouses, of the wealthy can show. The flowers, many of them four inches across, are so profuse, and form such a mass of dazzling purple, that the plant is distinguishable two or three hundred yards off. Going by the down train, the cottage is in the first road to the left on leaving the station. It is worth a flower-lover's express pilgrimage to Slough, to have the privilege of looking at it for five minutes, and then returning; just as the enthusiastic Spaniard, in the reign of Augustus, travelled to Rome only to look upon the great historian Livy, and having seen him went straight hack to Spain, without giving a passing thought to other matters, not even to the splendours of the splendid capital of the world.

NOTES OF THE WEEK.

— A BEAUTIFULLY variegated form of *Sibthorpia enropæa* has been found in Scotland, and will shortly be sent out from a London nursery. It is quite a gem in its way.

— CONSPICUOUS among herbaceous plants in flower round London at the present time, may be noticed dense masses of the fine *Alstroemeria aurea*, which is flowering very freely this season. It is a plant that should be in all collections of hardy border plants.

— THE fruit of ten orchards in Clydesdale was sold in Glasgow a few days ago, and brought £614, as compared with £326 realised for the same orchards last year. So that in that district at least we may presume there has not been such marked destruction from late frosts as in the southern parts of the country.

— ONE of the most beautiful of the outlying portions of Wimbleton Common is doomed. "Caesar's Camp" has been sold for building purposes; a fence has been already erected halfway across it, and there is every prospect of "eligible villa residences" being seen there in a few months, unless some action be taken with a view to securing it to the public.

— MUCH excitement prevails in Penzance, and the districts of West Cornwall which supply the metropolitan and midland markets with early vegetables, in consequence of a demand by the Vicar of Gulval for a re-valuation of the tithe rent-charge in his parish, on the ground that agricultural land has been converted into market gardens since the tithe commutation. The legality of his application for a new assessment is disputed, and will probably have to be settled at law; but it is strongly urged that if it should be established, Parliament should be invoked to prevent—subject to the vested interests of existing incumbents—the interference with the development of the use of land which would arise from the possible repetition of similar claims.

GARDENING ROUND LONDON.

(DURING THE PRESENT WEEK.)

BY OUR SPECIAL-REPORTER.

PRIVATE GARDENS.

Indoor Plant Department.—Conservatories are now gay with Balsams, which are liberally supplied with manure-water; in order to secure a succession of blooming plants, some have all their flower-buds removed until about four to six weeks before they are required for use. Young Fuchsias now play an important part in these structures, as do also older plants of them trained to rafters in the form of climbers, which, if well attended to, as regards thinning and watering, their blooming season will be considerably prolonged. It is considered a bad practice to thin out too much of the wood at any one time; on the contrary, they should be gone over frequently, and as they always emit flower-buds at the joints as they advance in growth, shoots that attain too great a length are removed, giving such as remain a better chance to furnish fine flowers. Pelargoniums are now mostly done flowering, with the exception of zonal kinds, which are encouraged. Several annuals, from April and May sowings, are now in full bloom; others are coming on, and a few are being sown for later use. Coleuses are at present very effective; these are always best when produced from early spring cuttings; a few old plants only are retained through the winter, in order to furnish cuttings late in February and March. Coleuses, when bushy and well-grown, make charming vase plants, edged with *Tropæolums*, ivy-leaved *Geraniums*, *Æschynanthuses*, *Hoyas*, *Convolvulus mauritanicus*, variegated *Panicum*, &c. Among the best kinds of Coleus are Queen Victoria, Duke of Edinburgh, Princess Royal, Marshallii, Bausii, Prince Arthur, Beauty of St. John's Wood, Golden Gem, Hector, Wilsonii, Reevesii, and Telfordii aureus. *Plumbago capensis* is at present one of our finest greenhouse plants, both in the form of a specimen, and as a climber. Camellias planted in borders are daily syringed in warm weather. In order to give a little floral relief, pots of Japan Lilies, such as speciosum, roseum, and punctatum, are placed here and there among the *Acacias*, *Camellias*, &c., with excellent effect. These Lilies are top-dressed with rough lumpy loam and manure. Lilies in pots that have done blooming are laid on their sides against a wall or fence, in such a manner as to prevent rain from reaching them. Specimen Azaleas should, if possible, have a house to themselves, in which they can be placed near the glass. Hard-wooded greenhouse plants, such as *Heaths*, *Epacrises*, and many others, are now set out of doors on beds of ashes, and are carefully watered; the ground about them is also well saturated at least twice a day in bright weather. In stoves, *Allamandas*, *Bougainvilleas*, *Clerodendrons*, and *Stephanotis* are blooming freely, and when allowed to ramble over a trellis on the roof they have a much finer appearance than when trained on pot trellises, as seen at exhibitions. Stoves at this season are not generally very gay, the principal flowering plants in them being *Ixoras*, *Gloxinias*, *Gloriosas*, *Gesneras*, *Strelitzias*, and a few others. *Marantas* growing freely, if likely to become pot-bound, should be again repotted; plants of *Cyanophyllum magnificum* when growing freely, are likewise shifted a second time, using for the purpose good yellow loam, a little peat, decayed hot-bed manure, and white sand. *Caladiums* are being tied and trained rather openly, so as to permit of the free development of the young leaves. *Sonerilas*, *Bertolonias*, and similar fine-leaved plants are much more highly coloured when grown under bell-glasses perforated at the top, and otherwise treated like *Anæctochiluses*, than when grown in pots unprotected. As regards *Orchids*, *Cypripediums*, *Odontoglossums*, *Oncidiums*, and *Stanhopeas*, continue to afford occasional spikes of bloom. *Lælias*, *Cattleyas*, &c., are not allowed to get too damp. Air is freely admitted to the cool houses, and any plants growing freely, if necessary are top-dressed or repotted.

Flower Garden and Shrubbery.—Pruning of hedges, and also the shortening in of straggling branches of evergreens, are still being proceeded with. In the case of contending leaders, one is removed. The principal work in the flower garden now consists in hoeing, raking, and mowing and rolling. *Verbenas* and *Petunias* are being pegged down in such a way as to cover the ground. At the base of *Calceolarias*, little basins are formed for the retention of water, which is liberally given in the evenings. In what is commonly known as "carpet bedding," *i.e.*, beds composed of golden *Feverfew*, *Alternantheras*, *Antennarias*, and similar dwarf-growing plants, the pattern or designs are accurately preserved by removing any branchlets or leaves likely to obliterate or otherwise impair their shape. *Hollyhocks* from spring seedlings are again transplanted into deeply-worked, well-manured borders, such as those now empty by the removal of early *Cauliflowers*, *Potatoes*, or other vegetables. Cuttings of *Tea* and *China Roses* are inserted in wall

borders, and are covered with hand-lights. Budding of *Roses* is likewise being carried on. *Wallflowers*, such as *Marshallii* and some of the double sorts, are being increased by means of cuttings inserted in wall borders, prepared with a good dressing of leaf-mould and sand.

Indoor Fruit Department.—In early pineries, in which the fruit has been cut, the plunging or fermenting material is being turned out, and the pits thoroughly cleansed and lime-washed. Suckers are being firmly potted into six-inch pots, using for them fibry loam and a little charcoal; after being potted they are either plunged in front of late succession plants or in separate beds, and shaded for a short time during bright sunshine. Vines swelling fruit are allowed abundance of moisture, both at the root and in the atmosphere. Late vine borders receive good soakings of manure water, either from the farmyard or the cesspool, occasionally; immediately after the manure water has been applied, another soaking of pure water is given, in order to dilute the first application, and to wash it down. Figs are now producing a second crop, and in every instance this crop seems unexceptionally fine. They are allowed abundance of moisture at the root, overhead, and in the atmosphere. Stimulants are not often applied to Figs in the way of manure water, but a mulching of good fibry loam and rotten manure they thoroughly enjoy. Peach and Nectarine trees done fruiting are well syringed and supplied with water; they are also freely exposed to the air. Melons done fruiting are either thrown away and replaced by young ones, or cut back and encouraged to start anew; but young plants are best.

Hardy Fruit and Kitchen Garden.—Fruit trees on walls have their shoots gradually reduced, and those that are left tied in. In the case of Pears, Apples, Plums, and Cherries, where several shoots spring from one spur, they are all removed, except one or two, which are shortened back to within six inches or so of the base. This is not the case, however, with Morello Cherries, which always bear their fruit on the young wood, which is therefore preserved as much as possible, removing only weak and worthless shoots. Young Peach and Nectarine trees in pots, and also Figs, are now plunged outdoors in warm sunny positions; their pots are not covered over, but they are kept so that they can receive abundance of water. Plums in pots are treated in a similar way, and besides those not bearing fruit, those that are yielding a crop, are also turned out, with a view to improve the fruit. Strawberry runners for forcing are being pegged into three-inch pots sunk in the soil; they are stopped at the joint beyond that to be taken off. Runners for new plantations are also stopped when two or three of the joints have struck root. Rows of Peas are being staked and earthed up. The main winter crop of Turnips is thinned, and a successional crop of Radishes is being sown. A few early Kidney Potatoes are being planted, in order to have some young ones in early winter. Potato Onions are taken up and dried. A few Early Horn Carrots are being sown for drawing young. Of Purslane, a late crop is being sown. Salsafy and Scorzonera are being thinned, and their flower spikes removed. Of early Cabbages, a few are being sown for autumn planting, and in late localities the main crop is being sown. Savoys, Brussels Sprouts, and white and Sprouting Broccoli, are being earthed up, and all spaces that are empty, are being planted, giving them at the same time a good watering. Lettuces are being transplanted as required, and small salads are sown frequently. Vegetable Marrows are abundantly watered, and the shoots as they advance in growth are pegged down, so as to cause them to root at the joints.

NURSERIES.

Indoor Department.—Stove and greenhouse plants are now making good growth, and such as are forward enough, are encouraged to ripen their young wood by placing them in cooler and more airy quarters. Young plants of *Allamandas*, *Dipladenias*, *Bougainvilleas*, *Jasminums*, *Thubergias*, *Ipomeas*, *Passifloras*, and others are being repotted, using for the purpose, good rough loam, leaf mould, and a little white sand; to the *Allamandas* and *Jasminums* some add a little peat. After being potted they are tied to stakes, placed rather closely together in a house or pit, and kept a little close for a time. Young *Rhododendrons* and *Azaleas* are being top-dressed, removing half an inch of the surface mould, then dusting on a little of Standing's manure, afterwards filling up with good peat and white sand; some firms mix a little of the manure with the mould, whilst others just sprinkle a dusting between the old and new soils. Young plants of *Lapageria rosea* are also similarly treated. *Callicarpa purpurea* is being repotted, using two parts peat, one loam, and a good admixture of sand. Young plants of *Vitis antarctica* are also being repotted; this is one of the best vines for town conservatories. *Begonias* are set very thickly on shelves, and such sorts as *Weltoniensis*, *spathulata*, *hybrida floribunda*, and *Sandersii* are gently

syringed twice every warm day. Some are being forwarded for blooming, whilst others are just cut over so as to induce them to come in succession. The herbaceous kinds, such as *B. Boliviensis*, *intermedia*, *Sedenii*, &c., are placed on inverted pots near the glass, and are liberally encouraged to make growth; they are also being increased by means of cuttings. *Bouvardias* are well pinched, and kept in an intermediate house, where they are starting freely. *Cyclamens* are arranged together quite closely on shelves near the glass in cool houses; they are not kept quite dry, but receive regularly a little water, so as to preserve the bulbs from shrivelling. *Dracaenas* are being cut down, and the stems cut into pieces, from two to eight or nine inches in length, which are inserted in the cocoa-nut fibre, and, as young shoots spring from the individual eyes, they are taken off singly with a heel, and treated as cuttings. *Pandanuses* are increased by means of the shoots that issue from the base of the large plants; these are taken off with a heel, and are inserted in the plunging material until they begin to push out rootlets, when they are taken out and potted singly. From incisions formed on stems of *P. Veitchii*, that had been thus stripped about two months ago, another progeny even more numerous than that previously taken off, is being produced. *Ficuses* are being increased by cuttings; the stronger-growing kinds are allowed to remain exposed for some time prior to being inserted, so as to dry up the milky matter which they contain. The small-leaved climbing kinds are being propagated from shoots cut up into pieces about six or eight inches long; they are inserted in peat and sand under hand-lights or frames in pits.

MARKET GARDENS.

THE principal work in these now consists in stirring the surface of the soil about growing crops, and in gathering fruit. The principal crops at present ready for market are Cauliflowers, Cabbages, Peas, Broad and French Beans, Potatoes, Onions, Carrots, Vegetable Marrows, Cucumbers, Globe Artichokes, &c. Cucumbers are producing good crops now, and are assisted by applications of manure water. In many cases guano-water is given them in preference to any other, as it is not only highly manurial, but is also believed to be a preventive of red spider. As much as two shillings a dozen is often paid for toads to place in Cucumber frames, in order to keep down wood-lice. Vegetable Marrows are producing abundantly; intervening crops are removed, and the ground mulched. Custard Marrows, which are slower growers than the common sorts, are now also bearing freely. Tomatoes are now receiving close attention in the way of watering, for the retention of which drills are drawn to each side of the plants; they are also mulched with short dung. This crop is being deprived of all suckers and lateral shoots, preserving only the main stem, or at most only such wood as is bearing good clusters of flowers or fruit. They are gone over every few days, thinned, and tied, the latter operation being performed so as to place them on the sunny side of the stakes. French Beans have begun to bear a fair crop. They are commonly grown in single lines from two and a half to three feet apart; between every alternate line is a row of Lettuces. The last sowing has just come up, and the ground about them is being loosened. Among Onions there is as yet little appearance of canker. Indeed, root crops in general look well. Cauliflower ground that has become vacant is new hoed, and afterwards loosened with a fork, but not turned over; by simply loosening the soil a little, what is under the surface is not so apt to become dry. The ground, after being loosened, is planted with Coleworts, about fourteen or fifteen inches apart each way. Good-sized plants are used for this purpose, as they do not yield so soon to the influence of drought. The first planted-out Celery is growing apace, and being in drills about six feet asunder, the sides of the ridges are broken with the hoe, so that a little of the soil may fall round the crowns. On the ridges, or rather curved spaces elevated to about six or eight inches in the middle, are planted Lettuces or Coleworts for winter use. The Celery receives a good deluge of water now and then, and if convenient a little manure water is likewise given to it. To Snow's Winter White Broccoli a little earth is being drawn; this is the kind that furnishes the early winter supply. Brussels Sprouts that were planted between lines of Potatoes, are now growing rapidly, and even where the Potatoes have not been lifted, the haulm has sufficiently drooped to be no obstacle to their growth. Ground that has been occupied by the second and third crops of Lettuces, is again planted with a line of Savoys, and one of Lettuces alternately, the rows being about fourteen or fifteen inches apart. Gherkins are progressing favourably. Superfluous young wood on fruit trees on walls is being removed. Useless and unproductive old fruit bushes are nrosted and burned as soon as the fruit they have borne has been cleared off. Frames, hand-lights, &c., for next season's work are being painted, and otherwise repaired.

PROMENADE AT THE HORTICULTURAL GARDENS.

GHOSTLINESS, says the *Morning Advertiser*, was the prevailing characteristic of the entertainment at the Horticultural Gardens on Friday evening. Seldom has anything been witnessed more original or more weird. Invitations had been issued for a "promenade," and when about nine o'clock we presented ourselves the promenade was in full swing, if the term may be used as applying to that in which there was not the slightest movement or animation. At that hour the gardens were as "gardens in a dream," full of shadows and dim, unreal forms, the whole revealed by the light of a crescent moon, and of a western sky in which long streaks of clouds were changing from purple to black, intersected by a fringe of poplars, as in some one of the gloomiest of Pre-Raphaelite pictures. Here and there, dotted over the grounds, were spectral forms—lovers chiefly, it is devotedly to be hoped—some in morning, some in evening costume, all silent, lugubrious, and reflective. It was a scene and a time for profoundest melancholy—a time for the writing of odes to the moon and stanzas to *Chloe*. Unfortunately, people had assembled with a view to its being a time for enjoyment. Of that we, for ourselves, failed to discover the faintest traces. There was no attempt at illumination. Even the conservatory was like a tomb, wherein one's footsteps echoed as the footsteps of a ghoul. Only one faintly-glimmering spot relieved the pervading gloom. In a dim corner, under a faint cluster of lights, the band of the Horse Guards Blue, huddling together in a faint attempt to decipher their notes, worried through the overture to "Semiramide"—a charming production, but not altogether of the newest or most exhilarating, and scarcely repaying us, as one of an assembled hundred or so, for our wasted evening.

It was understood that this "promenade" was an experiment. Let us rejoice, then, in the reflection that, as an experiment, its failure was utter and complete. It was not attended with even a gleam of redeeming success. Except to those "full fathoms five," and a trifle lower, in love, to whom it offered an opportunity for unlimited "spooning," it was dreary and depressing to the last degree. Only one thing was wanting to complete our misery. It should have taken place on the preceding evening, when the thunderstorm was raging, so that the guests might have huddled together in the dark conservatory, gazing terror-stricken into each other's faces as they were revealed by the lurid flashes of lightning. That would have been a trifle more depressing; or perhaps not, for there would have been the danger and consequent excitement, and these emotions would have saved us from the utter depression and inanity of the actual experimental promenade.

BOILER TRIALS AT BIRMINGHAM.

AWARDS OF THE JUDGES.

THESE trials did not terminate until Saturday week, and it is consequently only within the last few days that the judges—Mr. H. T. Hassall, Mr. Walter May, and Mr. Edward Bennett—have given their decisions, delay having been occasioned by the tedious nature of the investigations they were called upon to make. The *modus operandi* adopted by them may be thus stated:—One thousand feet of four-inch piping were ranged in four sections, at an elevation of several feet from the ground, and connected at one end by transverse piping, to which branches were attached. Parallel with this transverse piping were the various boilers, each of which in its turn was connected by a branch with the transverse piping; but in those cases where the capacity of a boiler was set down in the certificate of entry as being only five hundred feet, one half the entire quantity of piping was shut off by means of a valve. Access to the heated water was gained by the insertion, at the outer end of each range of piping, of vertical wrought-iron tubes, down which highly sensitive "standard" thermometers, supplied by Messrs. Joseph Davis & Co., Polytechnic Institution, Regent Street, were passed. The following are the awards:—The gold medal to Messrs. Hartley & Sugden, of the Atlas Works, Halifax, for their welded wrought-iron chambered saddle boiler, with extended water way. A silver medal to Mr. Benjamin Harlow, Macclesfield, Cheshire, for the best tubular boiler and connections in competition. A silver medal to Mr. Benjamin Harlow, for his improvement in joining hot-water pipes. A silver medal to Messrs. Jones & Rowe, Worcester, for "The Witley Court Boiler," as the best on exhibition without trial. A bronze medal to Mr. Frederick John Mee, Liverpool, for combination of hollow wrought-iron bars, dead plate, and back, for attachment to existing saddle boilers. A bronze medal to Mr. S. Deard, Harlow, Essex, for his small "Amateur's Heating Apparatus." In the communication setting forth these decisions, the judges observe that the trials of the boilers were conducted under great

disadvantages as regards weather—a circumstance which has rendered it very difficult to arrive at satisfactory conclusions; but as some of the boilers were tried more than once, all have been dealt justly by. They consider that in any future trials it will be necessary to house the pipes in some manner to obviate the difficulties caused by variations of temperature and wet weather. They also recommend that the conditions to be complied with by exhibitors should be more precisely and fully laid down.

SOCIETIES, EXHIBITIONS, &c.

CRYSTAL PALACE ROSE SHOW.

(JULY 13TH.)

This was a good show, and, as usual, very attractive. Beside Roses there were Mr. Peacock's group of Succulents; a miscellaneous collection of stove and greenhouse plants, from Mr. J. H. Ley of Croydon; a few stands of Carnations, Picotees, Verbenas, and double Pelargonium blooms, and some table-decorations. Roses in the nurserymen's collections were excellent, and those from amateurs were also good. The principal exhibitors were Messrs. Paul & Son, Mr. C. Turner, Messrs. Veitch, Mr. B. R. Cant, and Mr. Keynes. Amongst the dark-red roses, the best were Louis Van Houtte, Camille de Rohan, Alfred Colomb, Duke of Wellington, Pierre Notting, Charles Lefebvre, Triomphe de Paris, and some others. To S. Reynolds Hole, a most beautiful hybrid perpetual, exhibited by Messrs. Paul & Son, a first-class certificate was awarded. Amongst blush or pink-coloured ones, the following held conspicuous places, viz., Louise Peyronny, Paul Verdier, Comtesse de Chabillant, Mademoiselle Eugene Verdier, Baroness de Rothschild, &c. For prizes offered for collections of yellow roses, Céline Forestier, Gloire de Dijon, Triomphe de Rennes, Maréchal Niel, Madame Falcot, La Boule d'Or, Isabella Gray, Madame Margottin, and others competed. In the class of twelve trusses of any single variety, the first prize was won by Messrs. Paul & Son with a stand of splendid blooms of Alfred Colomb; the second by Messrs Veitch & Son, with Baroness Rothschild; the same rose from other contributors also received two third prizes. Maréchal Niel, from Mr. Turner, likewise came in for a third prize; and a fourth was awarded to a stand of Mademoiselle Marie Rady, from Mr. Coppin, of Croydon.

The table decorations were highly satisfactory. Branched epergnes have, we are glad to see, almost disappeared. The flowers used, we observed, were mostly hardy; but in one of the epergnes, mingled with wild flowers and grasses, were a few sprays of white Orchid blooms, which added a charming richness to the design. Young Palms seem to be a leading feature for centre-pieces, and, where the stems are long and naked, a slender piece of *Lygodium scandens*, hung carelessly around them, adds to their grace and beauty.

Mr. Peacock's Succulents comprised several very curious *Opuntias*, such as *O. robusta*, a large, broad kind, surmounted by two smaller growths, giving the plant the appearance of a flat, shallow plate standing on its side, with two smaller ones attached to its top; *Cereus peruvianus* monstrosus, a very curious plant; also many very remarkable-looking specimens of *Gasterias*, *Mammillarias*, *Agaves*, *Echinocacti*, *Senperiviums*, &c.; the singular *Echinocactus Pottsi*, one of the most odd of all grafted cacti; and *E. bicolor*, a small plant supported on a slender stem, and crowned with a beautiful flower. To these have subsequently been added no fewer than eight van loads of Succulents, all from Mr. Peacock's collection, and which have been on exhibition at the Palace during the past week.

ROYAL HORTICULTURAL SOCIETY.

(JULY 17TH.)

PROMINENT among subjects exhibited on this occasion were half-a-dozen small tubs of Clematis from Messrs. Jackman & Son, of Woking. They consisted of *rubella*, Mrs. James Bateman, Thomas Moore, *rubra violacea*, *Alexandra*, and one of *caerulea odorata*, all in beautiful condition; and in addition to the specimens in tubs, the same exhibitor also staged some stands of cut blooms, magnificent examples of this lovely class of hardy decorative plants. Of Liliums in pots only two groups were furnished, one from G. F. Wilson, Esq., Weybridge Heath, and one from Mr. Bull, of Chelsea. Mr. Wilson furnished examples of the true *L. tigrinum*, one of which was crowned by no fewer than twenty-eight flower-buds. There was also a very fine specimen of *L. longiflorum* Wilsonii, strong in growth, and producing pure white flowers, much larger than we generally see; also another Lily named *L. japonicum* Takesima, with flowers not unlike longiflorum, except that they were scarcely so large, but apparently produced in greater profusion. Amongst varieties in this section may also be mentioned *L. Leichtlini* majus, a tall-growing sulphur-yellow coloured kind, distinctly marked with small brown spots; also the slender-growing, deep crimson coloured dwarf *L. concolor* var. *sinicum*. Messrs. Barr & Sugden exhibited several cut blooms of this interesting family. A few bulbous plants, in the form of Gladioli and Tuberoses, were exhibited by Mr. Standish, of Ascot. A very interesting plant of the giant Hyacinth, *H. princeps*, was sent by Messrs. Rollissou & Son. Phloxes were well shown in pots by Messrs. Downie, Laird, & Laing, and likewise by Mr.

T. S. Ware; amongst the best were Queen of Whites, a pure white; Dr. Masters, a deep crimson; John Laing, a deep crimson shaded with violet; Venus, a light coloured one, with a deeply-marked crimson eye; and others. Three fine specimen Yuccas in flower were furnished by Mr. T. S. Ware, who also contributed some very fine Pentstemons, and a small miscellaneous collection, comprising a new and pretty *Artemisia*, a pretty white, deeply-lacerated *Cineraria*, called *acanthifolia* var. *laciniata*, and a lovely clove carnation, called Chief Justice.

Of hardy perennials, a good collection was supplied by Mr. Parker, who also contributed a group of tender plants, amongst which was *Gloriosa superba*, many *Caladiums*, and some *Marantas*. Mr. Turner had some excellent Carnations and Picotees, also Roses, and some good Pelargoniums, both single and double. Perhaps the most interesting feature at this meeting was the collection of Orchids from Mr. Denning, of Grimston Park, every plant amongst which was of the greatest possible interest. In this group was a plant of *Masdevallia Harryana* with five expanded flowers, several well-flowered *Stanhoopes*, and several fine *Aërides*, *Saccolabiums*, and grand plants of *Anguloa Clowesii* and *Ruckeri*; also a few plants of *Epidendrum vitellinum* majus, one of which, producing large branched flower spikes, was perhaps the finest specimen in flower ever exhibited in England. There was also a good group of Balsams, from Messrs. Lee, of Hammersmith; and a basket of *Bouvardia Vreelandii*, a good white faintly shaded with pink, from Mr. Standish.

Fruit and vegetables were sparingly exhibited; they consisted of a few dishes of Nectarines and Peaches, a few Melons, and a good Providence Pine-Apple. A few very large onions were exhibited by Mr. G. Mills, Wycombe Abbey; nine of the Giant White Tripoli weighed fourteen pounds, and another nine of Early White Naples weighed ten and three-quarter pounds. Among Cucumbers the winning ones were Blue Gown and Fulmer Hero.

First-class certificates were awarded to *Lilium japonicum* Takesima, to *L. tigrinum* splendens, to *L. Leichtlini* majus, all from G. F. Wilson, Esq., Weybridge Heath. Similar awards were also conferred upon Picotee Princess of Wales, Juliana, Edith Dombrain, Norfolk Beauty, Ethel, and B. C. Bryant; also to Carnations Superb, Isaac Wilkinson, and Mrs. Frederick Burnaby, from Mr. C. Turner, of Slough. First-class certificates were likewise awarded to Pelargonium Mrs. Quilter, from Mr. C. Turner; and to Pelargonium Pink Pearl, from Mr. J. King, Allnanry Park, Binglefield.

Cultural commendations were awarded to a collection of Orchids from Mr. W. Denning, Grimston Park; and also to *Masdevallia Harryana*, and *Epidendrum vitellinum* majus, from the same exhibitor. Like awards were given to a stand of cut blooms of Clematises from Mr. Jackman, and to a group of Balsams from Messrs. J. & S. Lee, of Hammersmith; to a Providence Pine from Mr. W. Miller, Worksp Manor, Notts; and to a dish of Violet Hatve Nectarines from Mr. Tillery, of Welbeck.

COVENT GARDEN MARKET.—July 19th.

Flowers, both in pots and as cut blooms, are plentiful. Those in pots consist mostly of Fuchsias, Balsams, and Japan Lilies; also some nice plants of Heliotropes, dwarf Cockscombs, Calceolarias, and great quantities of *Rhodanthe Manglesii*, which is found of great use in bouquet-making. Carnations, mostly self-coloured, may also now be obtained, likewise Pelargoniums, both single and double. Begonias, Marantas, Coleuses, India-rubber trees, little Palms, Screw Pines, and Ferns, may also be seen, together with hanging baskets, both for windows and conservatories. These are filled with Achimenes, turned out of small pots, *Isolepis gracilis*, small Ferns, variegated Panicum, *Petunias*, Ivy-leaved Geraniums, *Torenia asiatica*, &c. For a centre piece, a *Draecena*, an erect growing Fern, a *Gloxinia*, or similar plants are used.

PRICES OF FRUIT.

	s. d.	s. d.		s. d.	s. d.
Apples .....half sieve	2 0	3 0	Melons .....each	3 0	8 0
Apricots .....per doz.	2 0	4 0	Nectarines .....per doz.	4 0	15 0
Cherries .....per lb.	1 0	2 0	Oranges .....100	6 0	12 0
Chestnuts.....bushel	8 0	15 0	Peaches .....per doz.	12 0	24 0
Figs .....per doz.	4 0	10 0	Pine Apples .....lb.	3 0	8 0
Filberts .....lb.	0 6	1 0	Plums .....per box	3 0	4 0
Cobs .....lb.			Strawberries .....lb.	0 6	2 0
Grapes, hothouse ...lb.	3 0	6 0	Walnuts .....bushel	10 0	25 0
Lemons .....100	7 0	10 0	ditto .....per 100	1 0	2 0

PRICES OF VEGETABLES.

Artichokes .....per doz.	4 0	6 0	Lettuces .....score	0 6	1 6
Asparagus .....per 100	4 0	8 0	Mushrooms .....pottle	2 0	3 0
Beans, Broad .....doz.	0 0	0 0	Mustard & Cress, punct	0 2	0 0
Beans, Kidney ...per 100	0 6	1 0	Onions .....bushel	3 0	6 0
Beet, Red .....doz.	1 0	3 0	.....pickling.....quart	0 6	0 0
Broccoli .....bundle	0 9	1 6	Parsley, .....doz. bunches	3 0	4 0
Cabbage .....doz.	1 0	2 0	Parsnips .....doz.	0 9	1 0
Carrots .....bunch	0 6	1 0	Peas, Continental, quart	0 0	0 0
Cauliflower .....doz.	2 0	6 0	Do. English .....do.	0 9	1 6
Celery .....bundle	1 6	2 0	Potatoes, Kidney...cwt.	10 0	14 0
Chilies .....per 100	1 6	2 0	Potatoes.....do.	8 0	12 0
Colerworts doz. bunches	2 6	4 0	Radishes doz. bunches	0 6	1 6
Cucumbers .....each	0 6	1 0	Rhubarb .....bundle	0 6	1 0
Endive .....doz.	2 0	0 0	Salsify .....do.	1 0	1 6
Fennel .....bunch	0 3	0 0	Scorzoneria .....bundle	0 9	1 3
Garlic .....lb.	0 8	0 0	Shallots .....lb.	0 4	0 6
Herbs .....bunch	3 0	0 0	Spinach .....bushel	0 0	2 6
Horseradish .....bundle	3 0	4 0	Tomatoes .....doz.	2 0	4 0
Leeks .....bunch	0 2	0 6	Turnips .....bunch	0 4	0 9

THE GARDEN.

—o—o—o—
 "This is an art

Which does mend nature: change it rather: but
 THE ART ITSELF IS NATURE."—*Shakespeare.*

ENGLISH GARDENERS IN AMERICA.

BY PETER HENDERSON, JERSEY CITY.

You have alluded at p. 48 to the great mistake made by many English gardeners in coming to the United States at seasons of the year when it is next to impossible to get employment. It must be remembered that the climate of the United States is widely different from that of England, and that its horticulture is yet crude, compared with that of Britain; both these reasons have much to do with those who should emigrate and when they should do so. The regular hiring season for gardeners is in March, and the best time for the emigrant to arrive in New York is during February or March, so that he may have the best chance to select. A great many engagements are made in April and even May, but these are either situations for under-gardeners or for second-rate places.

But for men to arrive during the months of June, July, or August, the chances are more than equal that they may be months without being able to get a stroke to do. The nursery system and even our florists' establishments are carried on entirely different from those of England; so that a gardener cannot so readily drop into them temporarily, as with you, for few skilled men are employed unless regular hands, the bulk of the *employés* being Irish or German labourers. When the Southern States were in their prosperity, engagements were made in the autumn, but since the war, gardening is as yet little thought of in that devastated portion of America; hence, then, although the autumn is not quite so bad a season to come as during the summer or mid-winter months (December and January), yet the safest time is, as I have before said, February or March. Now about the men who should emigrate. I would premise that any gardener having a family should never leave England for America, unless he can make an engagement with a gentleman of whom he knows something, or who can be vouched for by some prominent nurseryman here. Scores of poor fellows are every year deluded in this way, leaving comfortable homes to be set down in some wilderness of a place, and when they have laid it out and beautified it, it is suddenly found that their services are no longer required. But for young men—from twenty to thirty—I think the chances are better than in England. A single man can sooner accumulate money; and business, such as that of seedsman, florist, or market gardener, can be begun with less capital in America than in England; not that money will go as far, for it hardly goes half as far, but there is less monopoly; and, in our quickly-rising towns and cities, business can be begun on a scale so low that you have little conception of in England. I say, then, any young man having an ambition to forward himself in that way has, I think, far better chances to do so in America than in Britain; but if his ambition rises no higher than to be simply a private gardener, there is not much to gain by the change.

Wages are as variable as are the gradations of gardening. A few of the first-class private situations around the larger cities are worth £200 per annum, house, &c.; but these are very few indeed; the majority will hardly average the half of that, and a large number probably not more than one fourth; this even may seem much higher than your rates, but remember that to a man with a family the expenses of living are so much more, that a sovereign in America is not worth more than ten shillings are in England to purchase the necessities of life at the present time; for example, I pay my common labourers nine dollars per week; if single men, five of these must be paid for board; if married, their house takes two from their nine dollars each week.

Single men as gardeners are paid from £50 to £100 per year and board, and, if they are ordinarily saving, may soon accumulate enough to begin business with. The greater number of

the leading nurserymen, seedsmen, and florists of the United States to day are "old country" men, who came out as private gardeners twenty, thirty, or forty years ago, very few of them having £5 in their pockets when they landed. There are few who began by their own savings who have not succeeded, in twenty years or less, in obtaining a comfortable independency, a thing they would not probably have ever obtained in the mother country.

WINDOW PLANTS.

BY J. C. NIVEN, BOTANIC GARDENS, HULL.

THE object of the following instructions is to point out the various operations necessary in the ordinary management of window plants, and the most ready mode in which these operations may be performed, as well as to give the names of such plants as are best adapted for window growth.

SOIL.

There is perhaps no greater difficulty than the occupant of a densely populated town has to contend with than that of getting good soil, or "mould," as it is more popularly called, and I need not say that the sweet and genial character of the soil is a most important element towards success. Only contemplate the sour black material so often used, possibly the result of a small mining operation underneath the cobble stones of a back yard, where it has lain for years deluged with impure water and unsweetened by the corrective influence of the atmosphere; a worse material for laying the foundation of success could not be found. Or possibly a handkerchiefful of road-scraps has been secured for the purpose, which, when used alone, possess a somewhat close affinity to cement, and when first applied to the plant have a tendency to burn the young roots, so that it is more than probable that by the time its fiery nature becomes exhausted the vitality of the plant is also extinguished. Where and how then is this desideratum (a good compost) to be obtained? My answer is, that if any one thing more than another in connection with window gardening belongs to such societies as that at Hull (see p. 55), it is to devote a small portion of their funds to the preparation of such compost, distributing the same at depôts where it can readily be obtained by those who possess plants. This would be a boon as highly appreciated as the distribution of plants in the autumn, because such plants are new acquaintances; whereas these that are pining for lack of proper soil have each their history, aye, histories that not unfrequently reflect some of the brightest beams of the best part of human nature.

POTS AND POTTING.

Garden pots are not expensive, and as they are sold everywhere, I assume that no one who cherishes a plant will begrudge the outlay of a few pence for that purpose; but failing the means, let them fall back on their own ingenuity as to what they will use as a substitute. There is a wide field for them, nor will I attempt to limit it by offering any suggestion beyond this, that whatever the substitute may be, remember every flower-pot is provided with an opening at the bottom for the important purpose of drainage. Further it is important to remember that unglazed ware is better than glazed ware. Assuming, then, that soil has been obtained, and that pots or some substitute has been found, when, it will be asked, are we to re-pot? A very proper inquiry. As a rule don't re-pot plants when they are showing their flower-buds, else possibly they will all fall off, and don't re-pot them in the winter, when nature is at rest. As a general rule the spring-time is best, when Nature's energies may be said to be roused into activity, and when she is best prepared to repair all damages which occur in the operation. In the spring-time—say in the month of April—if the pot in which a plant is growing is small in proportion to the size of the plant, and it evidently requires a larger pot, carefully turn the plant upside down, and tap the pot edge gently on the table, and the ball of earth and roots will come out on the palm of your hand, a perfect representative in shape of the pot it was grown in. It may appear to be nearly all roots, but as the greater part of these will be dead, although here and there will be young active roots just forming, use care. Remove the pebbles at the bottom, and in doing so make a note of what you see, namely, that these open fragments will be full of roots—old roots it is true, and possibly dead by this time—but they have had their use, and learn therefrom that this open material has an important value; and further, that roots, however much they dislike the light, and consequently always grow earthward, like a little air, and the moist air that fills up the space between this material is just what they revel in. After having carefully dislodged the open material from the roots, and loosened the earth by working gently with the fingers at the lower part of the ball, the plant will be ready for its new quarters. I presume, of course, that before you have proceeded

thus far you have a pot somewhat larger ready for its reception; and, if not a new one, it should be well washed, quite as much for the benefit of the plant as for appearance sake. Don't forget the lesson you learned about drainage: put some hard open material in the bottom, lay over it a bit of moss, or, failing this, a few of the dead or decaying leaves of the plant, these will prevent the soil filling up the crevices, and thus destroying the value of this material. Next place the ball of roots in the centre of the new pot, having previously put sufficient soil in the bottom to raise the surface of the old ball to within a quarter of an inch of the top of the pot, then fill in the soil well round, shake it down, and when full press it firmly with the thumbs, turning the pot round with the fingers during the operation. Don't be frightened that you will hurt the roots by pressure, but do it vigorously, for if the soil be left loose the water will escape as through a sieve. When this operation is completed, the surface of the soil will be level, rather less than half an inch below the top of the pot, thus leaving room for a water supply. Don't pile up the soil round the neck of plant—a fault too often committed—such an arrangement naturally sends the water down the sides of the pot, when perhaps the interior of the mass of soil is thoroughly dry. Though I have said that spring is generally the best time for potting plants, I do not say it is always so. Take, for instance, a Geranium, that flowers early in summer. When its flowering season is over it ought to be cut down, say to half its height, or even less. It ought then to be set out of doors in a shady place until it begins to form nice buds and small green leaves along its old branches; this it will do within a few weeks. After exhausted nature has begun thus to show her returning energies, the process of repotting should be attended to; but in this case it is best to shake all the soil away from the roots, trimming the long, straggling ones with a sharp knife, repotting in a smaller pot than that in which the plant previously grew. This small pot will get well filled with roots before winter, and in spring the plant should be transferred to a larger pot in which to bloom, the same process being repeated each succeeding autumn and spring. After potting, unless the fresh soil be in a wet condition—which it should not be—place your pots out of doors on a level place, and give them a good watering, so as to fairly penetrate the mass.

TOP DRESSING.

Supposing the accommodation for a plant in a window is limited as to size of pot, and you cannot arrange for a larger one, then, in lieu of repotting as before described, you may fall back on the expedient of top dressing. In doing this a moderately sharp piece of wood should be used—say a piece of old lath (don't use a knife), and having carefully loosened the surface soil for an inch or more, avoiding any injury to the roots, remove it all and replace with fresh soil. As this operation will be performed only on those plants that have been grown for several years in the same pot, and which will necessarily have impoverished the original soil, it will be advisable to add some stimulant. Possibly you will ask what stimulant you are to use. I will mention two or three which are most easily attainable. One may be picked up in the street or on any roadway frequented by horses, if you get an early start of the street-sweeper. This, mixed with the compost which the Window Garden Society ought to supply, will be a useful stimulant. Another, and one more lasting in character, may be obtained by getting a bone or two, drying them well before the fire, over it, or in it—it matters not which—and with a hammer, or even a flat iron, breaking the bone up into small pieces, as small as you can make them. Use a dessert or tablespoonful of these, according to the size of the pot, to mix with your soil, and you have a storehouse of food that will last the plant for a year or two. A little charcoal broken small is also a good thing, not that it contains much nourishment in itself, but, like a sponge, it absorbs any moisture near it. The charcoal also sucks and stores up all the bad gases in the atmosphere, and gives them out to the plant as the roots require them.

WATERING.

Next in importance to the soil comes the process of watering. How often the death of a plant is to be attributed to injudicious watering. I believe the idea is almost irresistible with many people, that if a plant looks sickly, water is the great curative agent, and that more water can alone restore it. They drown the vital principle in the plant with mistaken kindness. As soon as ever you see the leaf inclined to turn yellow and sickly, be careful with the water; very probably the withholding it for a few days will act as a restorative. The first principle of watering is, never water unless the ball of the plant is dry, and when you water, do it thoroughly, not in frequent dribbles, but give the plant a good drink when it is really thirsty. But you may possibly say, Yes, it's all very well for you to say "when it's dry," but how am I to know when it is dry? By a very simple process. Now, don't try to push your finger down the side of the pot, for you will do more harm than good if you do. Just, for example, tap with your knuckle the pots at this moment on your

window-sill, and if you have an ear for any more refined music than Scotch bagpipes you will detect a difference in the sound produced. One pot will ring with a bit of bell-like music, that's dry; another, knock as you like, returns nothing but a dead leaden sound, that's wet. Having thus told you when and how to water, it only remains to say that in all cases use rain water if you can possibly get it, and in cold weather, take care that the water is about the same temperature as that of the room in which the plants are growing before you use it. Saucers below the pots are useful, but never allow the water to stand in them, but shortly after you have watered your plants empty all that has run into the saucers, so that air may circulate through the drainage material, and act on the soil from below as well as from above. This circulation of air from below is entirely checked by water standing in the saucers. You will remember that I told you after repotting your plant to give it a good soaking, but for some days, possibly weeks afterwards, it may not require any more. During this time evaporation will only take place from the surface of the soil; and the roots, having been damaged, will have to repair the damage done to them, a somewhat slow process, before they can absorb water freely; and therefore, these repairs are more rapidly and efficiently accomplished where the soil is in a moderately dry state.

FROST.

As a matter of course, plants grown in a window are liable to get frozen. To guard against this possibility, it will be advisable to remove the plants from the window-sill during the night, in very severe weather at least. As soon as you see those beautiful vagaries of crystal put in an appearance round the edges of your window-pane, be sure a dangerous enemy is near at hand. If there has been no fire in the room during the day, remove the plants to the further side of the room, and don't replace them till you are assured that the danger is past. Should the plants get frozen by any mischance, what is to be done? Place them in a dark part of the room and sprinkle them with water—cold water, mind; hot water would be death to them. Let the process of thawing be gradual, Nature is never in a hurry.

HARDY PLANTS IN FLOWER ROUND LONDON.

(FROM JULY 18TH TO JULY 24TH, INCLUSIVE.)

BY OUR OWN REPORTERS.

Acanthus latifolius	Chamaepeuce diacantha	Hydrangea nivea	Satureja montana
spinulosus	Chelone	Hyssopus officinalis	Saxifraga Chamissoi
Achillea grandiflora	Chrysocoma Conaurea	Indigofera Dosua	Scabiosa Fischei
Ageratum bicoloratum	Chrysanthemum tricolor	Kitabelia vitifolia	suavcolens
Parmacia serrata pl. tanacetifolia	Cirsium ciliatum	Lilium chalcedonicum	Scutellaria scordifolia
Allium striatum	Clematis hybrida	Humboldtianum	Sedum Middeudorfianum
Atheca Heldreichii	revoluta	tigrinum	Sempervivum heterotrichum
Auomatheca curvata	Viticella Colutea	venustum	Seseli gummiiferum
Ambrinium Orontium	Corethrogyne spathulata	Lupinus pilosus	Sileue chlorifolia
Aralia edulis	Cypella Herbertii	Madaria corymbosa	Schafta
Asclepias speciosa	Diathus ramosus	Melissa officinalis	Spartium aphyllum
taberosa	Dierville caudensis	Monarda	Stalice bellidifolia
Aster Tradescanti	Ononis fruticosa	Russelliaua	cordifolia
Astilbe rivularis	Orgaanum Marjorana	Taus	Gmelini
Athanasia annua	Falkia repens	palchellum vulgare	minuta
Bonaveria Coronilla	Fuchsia gracilis	Papaver Buseri	oleifolia
Bravea geminiflora	Genista cotneusis	Pavia multiflorum	Polium Thymus scabral (?)
Calcocolaria pinnata	Geniana Pneumonanthe septemfida	parvifolia	Vandium speciosum
Campanula eximia	Gypsophila acuta	Petrocallis pyrenaica	Veronica crispa
isophylla Rainerii	Helianthus latiflorus	Pimpinella magna	Zephyranthes mesoleuca
raunculiiflora soldanellaeflora	Helianthus rigidus	Polygonum japonicum	Zietenia lavandulaefolia
Carlina acanthifolia	Helipterum Sandfordii	Psoralea acutis	Zygadenus chloranthus
Centaurea gymnocarpa	Hibiscus syriacus	macrostachya	glaberrimus
		Salvia chionantha	

Plants in this list are almost without exception such as have come into bloom during the past week.

A LAD who had lately gone to service, having had salad served up for dinner every day for a week, ran away; and when asked why he had left his place, replied "they made me yeast grass in the summer, and I were afraid they'd make me yeast hay in the winter; and I could not stand that, so I wur off."

THE FLOWER GARDEN.

THE ALPINE GARDEN.

(Continued from p. 8.)

CASCADES, ROCKY BRIDGES, ROCKY MARGINS, ISLETS.

As water is often introduced in connection with rockwork, and high cascades may be frequently attempted, and as the supply often flows from a woody knoll, it is well to take



Waterfall fringed with Yuccas, Dwarf Pines, climbing and trailing plants.

advantage of this position for the arrangement of Yuccas, large grasses, herbaceous plants of noble port, and the like, that cannot well be arranged among the dwarf inhabitants of the



Young Plants of Clematis falling over the face of artificial rock.

rock-garden proper. Among the many plants suited for this position, the new Clematises raised by Jackman and others are the most magnificent. Planted high up on the rocks in a deep

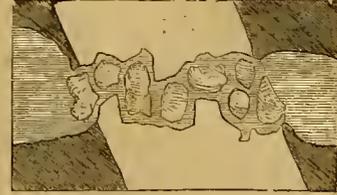


Stepping-stone bridge, with Water Lilies and other aquatic plants.

bed or vein of rich light soil, they will fall over the faces of the sunny crags, robing them as with imperial purple.

Where water occurs near the rock-garden, one or more little bridges are not unfrequently seen; but some such arrangement as that suggested in the accompanying woodcut would be more

satisfactory and tasteful. It is, however, introduced here chiefly for the purpose of showing how well it enables one to enjoy various beautiful aquatic plants, from the fringed and crimson-tipped Bog-bean and graceful Carex pendula at the sides to the golden Villarsia, and Water Lilies sailing among the stones. Arranged thus, a number of interesting plants



Plan of preceding figure.

not usually met with seem to crowd around for acquaintanceship. This mode of garden bridge-making, while infinitely more beautiful than the ordinary one, is less expensive. Care is, however, required to so arrange it that it may satisfy taste, offer free passage to the water, and an easy means of crossing it at all times.

Rockworks made on the margin of artificial water are very often objectionable—rigid, abrupt, unworn, and absurdly unnatural. In no position is an awkwardness more likely to be detected; in none should more care be taken not to offend good



Natural stepping-stone bridge.

taste. Charming effects may be produced on properly made rockwork near water, by planting it with a combination of choice moisture-loving rock-plants—Yuccas, Pampas Grass, and like subjects; but even the grace and beauty of the finest of these will not relieve the hideousness of the masses of brick-rubbish and stone that are frequently placed by the margins of water.

The next figure, showing the fringe of a little island in one



A glimpse at margin of island in Lake Maggiore.

of the lakes of Northern Italy, may serve to show how irregularly and prettily the little waves carve the rocky shore. Frequently in such places diminutive islands from a few feet



Islands in Lake (Westmoreland).

to a few yards across are seen, and, when tufted with Globe-flowers, Ivy, Brambles, &c., are very charming. A few artificial islets may be introduced with good effect near a rocky margin.

(To be continued.)

STOCKS FOR AUTUMN SOWING.

THE summer-blooming stocks being now in the prime of their beauty, seem to remind one that the time for sowing the Brompton, Queen, and intermediate stocks is at hand. There is always a risk about the two former, as a wet and cold winter or severe frost invariably decimates them, but those plants that stand and flower are very beautiful in the early summer. A large-flowering type of the scarlet Brompton can be seen growing in many a cottage garden in the south and south-west districts of London, and it is not unusual to see spikes from one and a half to two feet in length. The Queen and Brompton stocks are closely allied, and are probably only varieties of the same species; but it is curious to note that the seed of the white Brompton is pale in colour, that of the white Queen quite dark. Old growers of the stock distinguish the foliage of the Queen and Brompton stocks in this manner. They assert that the under portion of the leaf of the Queen stock is rough and woolly; that of the Brompton stock is as smooth on the under part as on the upper. Of the Queen stock there are three colours—purple, scarlet, and white; and of the Brompton stock the same number, with the addition of a selected crimson variety of great beauty, but somewhat difficult to perpetuate. Both of these types (if distinct enough to be regarded so) are really biennials, and the seed should be sown at the end of July in beds, and the plants, I need scarcely remark, should be transplanted to the open ground in the autumn.

The difficulty of wintering the Brompton stocks operates to deter many from attempting their cultivation. Even in the case of an unusually mild winter many will die. A well-drained subsoil and a porous surface soil will suit them best. Shelter from biting frosts and nipping winds is of great service. A second transplantation has been tried with considerable success, the last one made about December. The intermediate stocks are much used for cultivation in pots, to bloom in the spring and early summer, and are very useful for decorative purposes. The seed should be sown in August, and the plants, when large enough, placed in thirty-two pots, three plants in a pot, rich soil being used. They should then be placed out of doors in the shade, kept well watered in dry weather, and finally wintered in a cold frame, and drafted into the conservatory or greenhouse as they come into flower.

There is a very pretty variety of the intermediate stock, somewhat taller in growth than the scarlet one, and forming capital pyramids of white flowers. Some of the dwarf German bouquet stocks imported from Germany by our seedsmen make very good intermediate stocks, being dwarf and compact in growth, and well adapted for pot culture. One, of a bright crimson hue, has a very dwarf and yet vigorous habit, and flowers in great profusion. The East Lothian intermediate stocks, as they are termed, are in reality mainly used for late summer blooming, when they are very effective. They are sown in the usual way about the end of March, planted out at the end of May when some three inches or four inches in height, and bloom finely through August and September, and even later, as they throw out numbers of side shoots that produce spikes of flowers. Thus, by using the autumn-sown intermediate stocks for early blooming, the ordinary large-flowering German ten-week stock for summer flowering, and the later East Lothian intermediate stocks for late summer work, stocks can be had in flower eight or nine months of the year without intermission. Q.

ROSE BUDDING.

WHAT is the proper time for budding with a dormant bud? As late as possible, *i.e.*, before the sap ceases to flow. In general the last two weeks of August, or even the beginning of September, is a better time than the end of July. Should there be a deficiency of sap, it may be stimulated into renewed action by watering. Late budding has the two following advantages: 1. The buds take without sprouting before winter, and consequently suffer less from the frost, and push more vigorously in spring. 2. We are enabled to take buds from those shoots that flower continuously or several times, and these are the only ones that will reproduce shoots of a similar character.

Should buds be taken indiscriminately from all parts of a shoot which flowers continuously? No; and the three following rules will serve as a guide in this matter.

Rule I. Buds taken from the lower part of a shoot produce shoots which are at the same time not vigorous and bear few flowers—facts which at first sight appear irreconcilable; but we will give reasons for the statement. 1. The buds on the lower part of a shoot—a part which is in a condition of imperfect development—are themselves weakly, and cannot produce any but feeble shoots. 2. They bear few flowers. We shall give the reason for this presently; but will first state the second rule.

Rule II. The buds at the top of a shoot produce shoots which are moderately vigorous, but which flower very abundantly. That the vigour of shoots produced from such buds is moderate sufficiently explains why the buds themselves are only moderately vigorous; but that they should bear flowers most abundantly is undoubtedly a verification of the observation made by M. Vibert that buds will produce shoots which have a greater tendency to bear flowers in proportion as the buds from which they spring grew nearer to the flower on the parent stem. Thus the shoots on the lower part of a branch hardly ever flower, and the buds at the base of a shoot produce shoots which are almost always sterile.

Rule III. To understand this, it will be sufficient merely to state it. Buds taken from the middle of a shoot produce shoots which are sound and vigorous, but only moderately free-flowering.

These principles, which were laid down thirty years ago, have just been verified in a very intelligent manner by an excellent gardener—M. Bourdon, of Clairoux. In the rich soil of his grounds, buds taken from the lower part of shoots of the most free-flowering varieties have remained almost sterile, six grafts of *Maréchal Niel* having produced only one flower. The buds taken from this single flower-bearing shoot, close to the flower, produced shoots each of which bore a tolerably large number of flowers—fifteen to twenty.

The very free-flowering varieties, *Madame Damage* and *Auguste Mie*, have afforded subjects for interesting remarks. The buds of these taken from the lower part of the shoots produced rather feeble shoots, each bearing one or two flowers at the most; while buds taken from the upper part of the shoots near the flower produced, according to my experience, shoots which were covered with a rich profusion of blooms.—*Professor Raquet, in "Belgique Horticole."*

FUCHSIA RICARTONI AS A HEDGE PLANT IN IRELAND.

I BEG to corroborate all that your correspondent "Z." says in your paper of the 15th ultimo, in favour of the *Fuchsia Ricartoni*. Here with us it is valued even more for its substantial uses than for its beauty. I live in a stormy climate on the edge of the ocean (which, however, I do not admit to be "melancholy"), and although my kitchen garden is surrounded with a semicircular wall of some eleven feet high, I need interior shelter, and this is altogether provided by hedges of the *Fuchsia Ricartoni*, which are made by branches cut or broken into bits of any size you please, and stuck into the ground close together in a line. This affords very fair shelter the second year, and from that time forward the only difficulty is to keep your hedge within bounds. The beauty of these hedges at this time of year is extraordinary, and they are so self-sheltering, and our climate is so mild in winter, that they hold the leaf for a very great portion of the year. As to size, we quite surpass anything mentioned by your correspondent. I have one tree of *F. Ricartoni*, planted in my flower garden in the autumn of 1854, on which no care has been bestowed. It would have been much larger than it is now if it had not been for some years cut back at one side from a gravel walk. For the last five years I have let it have its own way, and allowed it to overrun gravel walks and ribbon borders, and each year I have had its measure carefully taken, and recorded by witnesses. In 1870 its circumference, measured with a line round the extreme tips of the branches, was 107 feet 7 inches; last year it reached 115 feet; and I will venture to say that this year it will considerably exceed 120 feet. I do not think it is more than 13 feet or 14 feet high. We have many much taller-growing among trees in sheltered situations. In a year or two it will reach the main walk of my garden, which cannot be allowed to be closed; so I propose to arch over the walk with a trellis, over which I expect the *fuchsia* will gradually grow, leaving a passage clear underneath. After that it will meet nothing to check it till some few yards further on it will reach a low cliff, which forms the shore of the harbour, and then I must leave it to settle its "Alabama question" with the ocean aforesaid.—*P. FitzGerald, Knt. of Kerry, Glanham, Valencia.*

CENTAUREA BABYLONICA.

AMONG the Centaureas by far the most distinct and remarkable is the very silvery-leaved *C. babylonica*. It is quite hardy, and when planted in good ground, sends up strong shoots, clad with yellow flowers, to a height of ten or twelve feet. The bloom, which continues from July to September, is not by any means so attractive as the leaves; but the plant is at all



Centaurea babylonica.

times picturesque. In groups, or, still better, isolated, on rough or undulating parts of pleasure-grounds, it has a very fine effect. When the leaves alone are seen, it is worthy of a place among the finest hardy variegated subjects, but when it sends up its strong stems, it is a fit associate for hollyhocks, and the very tallest herbaceous plants.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Pelargoniums in the Flower Garden.—It is not well enough known to amateurs that many bare spots in their beds may be soon furnished by inserting in them cuttings of variegated or green-leaved Pelargoniums. If closely set they are effective at once. Some kinds will root and flower well in a fortnight. The leaves at first look prettier than those of tall plants, as they sit so close to the ground and are so fresh-looking.—W. F.

Autumn-Sown Sweet Peas.—In August last I sowed some sweet peas as an experiment, that I might by chance obtain a late autumn bloom, in which I was deceived; but the peas growing well, my gardener banked them up in the winter with ashes. I have now hedges of sweet peas at least eight feet high, with haulm as strong as that of the everlasting pea, which have been in full bloom since May 30th. The flowers are magnificent, and I shall certainly try the autumn sowing again, should I be spared to do so. I send this as a hint to amateur gardeners.—R. M. L., *Hampton Wick, Kingston-on-Thames*.—[We are not surprised to hear your autumn-sown peas are so much finer than those sown in spring. There is often a very remarkable difference between annual plants sown in autumn and in spring, and there can be no doubt that all such plants as bear our winters should be sown in autumn.]

Bulb Culture in Holland.—The far-famed Dutch bulbs are chiefly cultivated near Haarlem and Lisse, and owe their superiority as much to the suitable texture and position of the soil—a calcareous sand resting on peat—as to the lavish use of manure. An area of 125 acres, devoted to hyacinth-growing near Haarlem, is estimated to bring in a revenue of nearly £30,000. In 1859, bulbs were exported to the value of £12,700; and in 1862 the village of Bloemendaal, “the Valley of Flowers,” sent forth no less than £200,000 worth. Where bulb culture is the main object of attention, the routine is frequently as follows:—**First year.**—The soil is broken up and dug to a depth of five or six inches, a heavy dressing of cowdung is applied, and a crop of potatoes taken. In the autumn the bulbs are planted, and the beds remain covered with reeds until the month of May. **Second year.**—About midsummer, the bulbs having been collected, grass is sown on the paths between the beds, and in the autumn tulips, crocuses, and occasionally different kinds of narcissus and ranunculus, are planted on the green sward.

GARDEN DESTROYERS.

THE NEW ENEMY TO THE VINE.

(PHYLLOXERA VASTATRIX.)

UPON reading in THE GARDEN of the 28th June last (p. 700), that “a new blight of a fatal character—the Phylloxera—had made its appearance in Bas Languedoc, and was causing very great alarm amongst the cultivators and proprietors of vineyards, and that in the district of Comtat the vine had already disappeared,” it occurred to me that the following account of the new enemy to the vine, translated from a periodical published at Ghent (*The Flore*, vol. 17), might be acceptable to your readers:—

In some localities of the south of France, the vines are suffering from the ravages of a destructive insect, which has lately been noticed for the first time. M. E. A. Carrière has published in the *Revue Horticole* an extract from an article which M. J. E. Planchon contributed some time ago to the *Comptes Rendus de l'Institut* (1868, p. 588). Here is the passage from the *Revue*:—I will here give a brief *resumé* of all I learnt about the habits of the Phylloxera vastatrix from a series of observations made on the spot, in three short visits to the south of France; also all I noticed with reference to the specimens which I kept in glass bottles during forty consecutive days. Its best known form is that in which no trace of wings can be discovered. When the insect is about to lay its eggs (that is, in its adult female state), it forms a small ovoid mass, having its inferior surface flattened, its dorsal surface convex; being surrounded by a kind of fillet, which is very narrow when it touches the thoracic part of its body, which (formed by five rather indistinct rings) is hardly separated from its abdominal part of seven rings. Six rows of small blunt tubercles form a slight protuberance on the thoracic segments, and are found very faintly marked on the abdominal segments. The head is always concealed by the anterior protuberance of the buckler; the antennæ are almost always inactive. The abdomen, often short and contracted, becomes elongated towards laying time, and there can be easily seen one, two, or sometimes three, eggs in a more or less mature state. The egg sometimes retains its yellow colour for one, two, or three days after it has been laid; more often, however, it changes to a dull grey hue. From five to eight days generally elapse before it is hatched. The duration of this period depends a good deal on the temperature. The quantity of eggs, and the rapidity with which they are produced, are probably determined by a variety of circumstances—the health of the insect, the quantity of nourishment it is able to obtain, the weather, and perhaps other causes. A female which had produced six eggs at eight o'clock a.m. on the 20th August, had fifteen on the 21st at four p.m., that is, she laid nine in thirty-two hours. Other females lay one, two, or three eggs in twenty-four hours. The maximum quantity is thirty in five days. The eggs are generally piled up near the mother, without any apparent order, but she sometimes changes her position so as to scatter them all around her. They have a smooth surface, and adhere lightly to each other by means of a slimy matter which attaches to them.

Hatching takes place through an irregular and often lateral rent in the egg, the empty and crumpled membrane being found among the other eggs in different stages of hatching. During the first period of their active life—two, three, four, or five days, as the case may be—the insects are in an erratic state. They creep about as if they were seeking for a favourable situation. Their movements are more rapid than those of adults. They appear to inspect, as it were, with their antennæ the surface they travel over. The movements of the antennæ are generally alternative, and, if the comparison may be pardoned, are not unlike the two sticks of a blind man, which he uses to explore the ground he is about to tread. After a few days of this errant life, the young insect seems to fix upon a spot to settle in. Most frequently there is a fissure in the bark of a vine, where their suckers can be easily plunged into the cellular tissue, full of saccharine matter. If you make a fresh wound on the root by cutting off a little piece of bark, you may see the “Pucerons” range themselves in rows around the wound, and once fixed, they apply to the root their antennæ, which appear like two divergent horns. At this period of their life, about the thirteenth or fourteenth day after their birth, they are more or less sedentary; but they change their places if a new wound is made on the root, which promises a fresh supply of food. What sense is this which direct these subterraneous “Pucerons” towards the place which is most suitable for them? It cannot be sight, as their eyes are merely coloured spots, and they creep as if they were blind. It cannot be hearing, because they seek no prey but a vegetable tissue. It is probably the sense of smelling; and we may well ask if the nuclei, which appear enshrined in the last articulations of the antennæ are not the organs of this function, the seat of which has been so much disputed? Among these non-adult insects, attached by their suckers to the vine roots, are seen, here and there, some of middle size. Their colour is a deeper orange, the abdomen shorter and more squarely formed. These individuals are more sedentary than the others. I have sometimes imagined they might be wingless (apterous) males of the species; but as nothing has happened to confirm this very problematical hypothesis, and as I have seen undoubted females resembling these examples in colour and form, I incline to the belief that there are no sexual differences among them. A kind of double moult precedes the adult state. The first takes place shortly after hirth, the second after laying time. Some uncertainty, however, hangs over the number of their changes, as the

cast-off skins are often found mixed up with groups of Pucerons of different ages, and it is difficult to distinguish them. On the morbid tuberosities of the fibrous vine-roots, or on the offshoots of the roots, the Pucerons (perhaps better nourished) seem to pass more quickly through the different phases I have described; but excepting that their colour is paler, they present no marked difference.

The winged form of the Phylloxera might easily be taken for a separate species. The rare specimens which I have seen have all come from the Pucerons nourished on the newly-attached vine radicles. In their infant (or it might be called their larva) state they resemble those which I have suggested may be males; but the buckler soon becomes more strongly marked than in these last, and a kind of band seems distinctly to define the separation between this and the abdomen. The sheaths of the wings, triangular-shaped and of a greyish colour, appear on both sides of the buckler. It is easy to predict the advent of a winged insect from this chrysalis. When one of these nymphæ is seen to quit its place, and to crawl over the root or up the side of the bottle where it may have been put, its transformation is near. Soon, instead of a sort of pupa, a beautiful little fly appears, whose two pairs of wings, crossed horizontally, are much larger than its body. It is impossible to doubt the identity of this insect with the Pucerons which formed one of the swarm on the vine-root. The details of the structure of certain organs—the antennæ, claws, varsi, and suckers—establish their identity. The horizontal position of the wings completely distinguishes the Phylloxera from the type *Aphis*, whose wings are always more or less inclined upwards. The two larger wings, obliquely oboval and cuneiform, have a lineal areole on the larger basilar half of their outer edge; and this is enclosed in an interior "nervure," which answers, I suppose, to the radial muscle. One single oblique nervure (or corneous division) is detached from the last, and reaches to the inner edge. Two other lines start from the end of the wing, and, becoming narrower as they proceed, advance towards the oblique nervure, but end before reaching it. These are not, perhaps, nervures, but rather folds, for I have observed them absent. The inferior wings, both narrower and much shorter, have a marginal nervure running from the base to the middle, but it loses itself in a gentle protuberance, which the wing shows in this place; a radial nerve runs parallel to the first, and disappears before it reaches the same spot. The eyes, black and (relatively) very large, are irregularly globular, with marked conical nipples. Their surface is granular, but a pointed depression is observed in the centre of each glandule. A round eye-shaped spot occupies the centre of the forehead.

Among fifteen specimens of the Phylloxera which have come under my notice, not one has presented any sexual difference. Almost all of them laid two or three eggs, and their deaths (which happened soon after) may have been caused by their imprisonment in the bottles. Their eggs resembled those of the wingless Phylloxera, and though they were only two or three in number they completely filled the abdomen of the mother. They were easily seen by placing the insect under the microscope. I do not know how long the eggs remain before they are hatched, or if they always produce the winged form of the insect. It is probable that these winged individuals serve for the transportation of this insect plague to a distance, and that these wings would serve them for a rapid flight—they are too inactive, they move them very little, and in rising from the ground their horizontal position is preserved. My observations, were, however, made under very unfavourable conditions—the insect being in a state of captivity; but I suppose that even in a natural state the wind is the principal agent for the dispersion of the Phylloxera, as it is for many of the insect tribe. In any case, the discovery of this form of Phylloxera provided with wings, and evidently fitted for an aerial life, is sufficient to explain the hitherto embarrassing fact of the rapid spread of the vine-plague. As to the spread of the disease from one vine to another, the wingless Pucerons may suffice for this, as, grouped in great numbers about the lower part of unhealthy vine-stems, they might easily attack the vines nearest them, even if they be healthy. It may be asked, in what manner do these insects manage to travel from one vine-stock to another, and how do they contrive to reach the fibrous roots of the newly-attacked stocks? Do they burrow under the soil, or do they not rather travel along the surface of the earth under cover of the darkness and coolness of night, and then, traversing the fissures in the bark, arrive in this manner at the extremities of the roots? This conjecture is a probable one, and the following experiment supports it:—

In a case one yard long I placed some garden soil from Montpellier, a place entirely free from Phylloxera. In this earth I carefully laid some pieces of vine cane infested with wingless Pucerons. I placed a hand-glass over each cane, and slightly raised the glass on one side, in order to allow the insect to creep out. At three centimetres distance from the pieces of cane I put some fragments of root from a healthy vine, in which I had made fresh wounds. In twelve hours the following results were obtained: three Pucerons had found their way from one of the vine canes to the nearest piece of vine-root. Some days after, twenty young Pucerons occupied the same fragment. A few insects were to be found in the other fragments. One piece of root had attracted none, but the vine cane nearest to it had very few insects upon it which were capable of changing their places. A similar experiment has been made by Mr. Frédéric Leydier, at the farm of Laucieux, near Sigondas, a part of the country already infested by the Phylloxera, and by another person near Sorgues. The results of these experiments have not been satisfactory; but this does not prove that under other conditions, or with a greater amount of perseverance, they might not have been successful. It is fortunate that the new enemy to the vine attacks it, in the first instance, at the base of the stem, and not underground at the fibres. As it is, a thorough

dressing of the bottom of the stem with coal-tar will probably prove an insurmountable obstacle to the progress of this destructive insect; but were the case otherwise, it would be very difficult to get down deep enough to reach an enemy so well protected by the depth of the soil.

From all we hear there cannot be a doubt but that this pest has already made its ravages on some of the vines in this country. A short time ago a gentleman in the south of England informed me that his vines would not grow more than two or three inches; he determined to take them up, and examine the roots; he did so, and found them swarming with the Phylloxera. They could be seen with the naked eye, looking like grains of yellow sulphur, in the crevices of the roots, and with a glass of good power they were distinctly visible. The roots were barked by the insects, and the vitality of the vines was destroyed.

It must be borne in mind that from the high state in which the vine is now cultivated, it is much more susceptible of attacks from insect plagues, and requires more watchfulness and skill on the part of the cultivator to guard against them. The best remedy which I can suggest for the disease is, that, immediately the Phylloxera is discovered, whether in a private garden or a nursery, it should be "stamped out."

DELTA.

"THE VERMIN ASPHYXIATOR."

SUCH is the title of a machine of ingenious but simple construction recently invented by Mr. Samuel Bateson, and commending itself at once by its name to the notice of gardeners and others who suffer from the depredations of vermin. It consists of a small iron furnace or crucible, connected by a pipe with a circular chamber in which a fan revolves. The lower part of this chamber is shaped into an aperture or nozzle, to which india-rubber tubing of any required length can be fixed, and the machine is put in action by turning a handle; this sets the fan in motion, and expels through the tubing with great velocity and regularity, and in a condensed volume, the vapour, be it sweet or foul, health-giving or life-destroying, of the compound burning in the crucible. The expulsion of vapour by means of a fan is of course an old and well-known method, already employed in a great variety of processes, and the novelty of the asphyxiator consists, firstly, in several contrivances rendering its action and construction simple and durable and the whole machine handy and portable; and, secondly, in the idea of utilizing for so many purposes from one machine a forcibly-propelled stream of vapour, which may be poisonous or sweet-scented, sulphurous or merely smoky, according as required. In the waste ground behind the west wing of the International Exhibition, Mr. Frank Buckland explained, the other day, the action of the asphyxiator, which he said was valuable as a fumigator for sanitary purposes, and infinitely more handy than the old system of fumigating by means of burning sulphur pots, since it can be used from without, the nozzle of the tube being inserted through a hole in the door or hatchway. Mr. Buckland's first experiment was upon two plants covered with aphides. These were placed in a glass case, to which was fixed the nozzle of the tube leading from the fan chamber of the asphyxiator, the furnace being filled with a specially prepared "insect destroying paper." The glass case was soon clouded with impenetrable fumes, and when, after a few minutes, the reeking plants were removed, it was shown that the aphides were no more, while the plants were no worse for their vapour bath. Other experiments were tried on snakes and weevils, and with equally satisfactory results; indeed it was clear that the asphyxiator would prove most invaluable for the destruction of vermin, and for every purpose of disinfection and fumigation. If it can be made generally effective in the open air, what a blessing it will be to gardeners and hop-growers!

NOTES AND QUESTIONS ON GARDEN DESTROYERS.

The Cabbage Butterfly.—According to Dr. Uhler, of Baltimore, the European cabbage butterfly, the pest of the English cultivator, has at last reached Baltimore in its invasion of the United States. It has been known for some years more to the eastward, and has been slowly but surely creeping along, until it bids fair to involve the whole country in its ravages.

Ants versus Caterpillars.—Ants appear to be the most inveterate and bitter foes of field caterpillars. The farm inspector Sternelborg, of Lippstadt, gives a report of a trial thus made to get rid of caterpillars:—In the year 1871 the garden of the postmaster Ludwig, at Ruthen, was devastated by caterpillars. Cabbage plants of all kinds were threatened with destruction. In this extremity a labourer brought a sackful of large ants from the forest, and strewed them over the cabbages. The caterpillars took to instant flight, and, as fast as their means of locomotion allowed, they hurried over wall and hedge with all possible speed, and by the following day not a single one was left in the garden.

WE have heard of the "flowers of rhetoric,"—its fruits are the Queen's peach.

THE ARBORETUM.

TRANSPLANTING LARGE TREES AT BROOKLYN.

THE moving of the trees in the fine park at Brooklyn (of which we gave a plan in our number for June 22nd), was an important and very successful operation. At the time the lands of the park were taken, there was a large number of fine young trees of natural growth, from twenty to forty feet high, and from five to fifteen inches in diameter of trunk, in situations where, in the construction of the projected improvements, they would have to be removed or destroyed. On the line of some of the former roads and streets within the present park area, and more especially on some improved private grounds outside, there were also many fine young trees of varying sizes, chiefly maples, elms, lindens, oaks, &c., which had been planted from ten to twenty years ago, but which were in positions where it was not desirable for them to remain. For the removal of these a large truck was specially designed by Mr. Culyer, the chief engineer, and constructed for this purpose, and the following season—November 1867 to April 1868—over one hundred trees were moved with it to desirable positions in the park. It was found quite practicable with this



American Transplanting Machine.

truck to carry balls of earth surrounding the roots twelve to fourteen feet across and more than four feet in depth, with a weight, including tree top, estimated in some cases as exceeding fourteen tons. From the accompanying illustration of the truck, the method of carrying the tree can readily be understood. The following season another truck was built, on the same general principles, but of a somewhat smaller size, and more especially designed to carry shrubs or trees branching near the ground. With these two trucks over nine hundred trees of similar size have since been transplanted.

The result has so far been quite satisfactory. Many even of the larger trees have already well recovered, and are now flourishing finely. A considerable number have as yet a stunted, stationary character, while with some a renewal of permanent vigour seems doubtful; but the actual loss, so far, has only been about one in a hundred. The kinds which have been thus moved by the trucks in greatest

numbers are maples, elms, lindens, birches, hornbeams, and dogwoods. Some ashes, oaks, cherries, tulip trees, sweet gums, walnuts, chestnuts, and beeches of similar size have also been successfully moved from locations where there was sufficient clay in the soil to make the ball firm and cohesive; but, except in stiff soil, the risk of moving these is too great to justify extensive operations. No hickories of any large size have been attempted, as, from their peculiarly large and deep tap roots, they are very sensitive to any injury. About twenty spruces and pines, from fifteen to thirty-five feet high, have likewise been moved by the trucks. The method of raising and lowering the tree, and working the truck, is briefly as follows:—A trench is dug around four to seven feet from the stem according to the size of the tree, and as deep as the roots descend, and the soil is taken away from beneath the latter until only a small central prop is left, just sufficient to support the tree. Strong chains and timbers are then placed under the ball; the truck is detached at the place indicated by the clamp fastenings; each part is wheeled into position from opposite sides, enclosing the trunk, and then fastened together again. The chains are attached to the tackles, and, by levers, are easily wound on to the windlass until the ball is high enough to clear the ground in conveying the tree to the place where it is to be planted.

The excavation to receive the tree is made rather deeper and much wider than the ball, and is filled in to the proper level with good soil; the truck is then drawn over the hole, the wheels being supported on strong planks if the hole is wider than the truck, and the tree is lowered easily to the prepared bed. The trench around the ball is then filled up with good soil, any exposed or bruised roots being first cut off smoothly. Unless the soil around the roots be very gravelly or sandy, very little of it drops or is jarred off during the operation.

J. Y. C., Brooklyn Park.

INFLUENCE OF FORESTS ON RAINFALL.

THAT forests do not induce and control storms is no doubt true, but to infer that they have no influence on the rainfall would be little less erroneous than to suppose that the amount of woodland would be a measure of the rain that might be expected. Extensive countries were in former ages highly productive, and hence it is supposed were watered with abundant rains, but are now nearly barren and seldom have rains, and hence it is inferred that denuding the soil and exposing it for centuries to the hot sun and drying winds is the reason there are no rains or storms. This is, no doubt, an error; although the amount or want of forests may have no considerable influence and effect on the rainfall during the warm part of the year, other causes and influences, as shown by meteorology, are mainly instrumental in inducing and controlling storms. Many are rather liable to jump at conclusions, and sometimes go from one extreme to the other. Finding that forests do not entirely control the rainfall, they are liable to go to the other extreme, and say they have no influence at all. It is, nevertheless, a fact that, while other agencies may have a controlling influence in inducing storms, still the presence of considerable woodland may make a material difference in the amount of rain during the growing season of the year. How the forests may thus affect the rainfall I will now try to show.

Water is evaporated by heat and diffused through the air until condensed by cold, when it usually falls in the form of rain. Condensation is first seen in the form of a cloud, very light and high perhaps at first, but lower and heavier as the moisture in the air becomes more condensed. A familiar idea of a cloud may be found in Professor Henry's statement that a "fog has been aptly called a cloud resting on the earth, and a cloud a fog suspended in the atmosphere." A cloud is of the same weight as the stratum of air in which it floats; and as, in all sections except on mountains, clouds are at some height, it follows that they are lighter than the air at the surface of the ground; consequently clouds are as easily moved through the atmosphere as the winds, and hence are extremely sensitive to the slightest attraction or influence. As water has an attraction for water, it is easily seen why clouds and rains are naturally drawn towards large bodies and streams of water, as well as towards cool, moist woodlands. Another cause of more rain in such places is that the cool, moist air over water and woodland favours condensation, when it is fairly started, and thus increases the amount of rain; but a dry, hot surface air has the opposite effect. This last influence is so great in some places as entirely to prevent rain falling at any time of the year. Of this good authorities furnish many examples. Thus it is seen how the clouds and moist winds result in rain, when condensed by the colder mountains, in the one case, and are dispersed and diffused through the atmosphere by the hot, dry air of the desert on

the other. California furnishes another good example. In a large portion of the State the westerly winds blow from the Pacific Ocean nearly all the year, and in summer, when, of course, evaporation is the greatest and the winds contain the most moisture, there is no rain, as the surface of the ground and the surface air are warmer than the winds; in the winter, when the winds naturally contain the least moisture, but the ground and the surface air are cooler than these ocean winds, they get their supply of rain for the year.

The same agencies and influences in nature are always at work in all sections, the cooler and more moist air in and over woodland favouring rain, while the hotter, drier air over wide, open countries, has the reverse effect. Then no slight cause of droughts, or of the greater severity of droughts during hot weather, in such open countries, is the wide and strong sweep of the winds, which often carry off the evaporation and moisture, to be finally condensed in some more favourable section for that purpose, perhaps, over the Atlantic Ocean. With plenty of woodland to break up these winds and thus favour condensation, this carrying off the moisture that is needed in the country may be much less general and severe. Scientific men explain that the amount of rain in a shower or storm may be influenced by the amount of moisture in the air at the place. Thus, in the vicinity of lakes and large rivers, or of large bodies of woodland, where the air is cool and moist, there may be a heavy rain; while over hot, dry plains, where the air is very dry, the same storm may be very light, perhaps, it may not rain at all. This will explain the failure of some storms that afford plenty of rain in most places, while in others there is very little. In the latter places these storms, or more properly appearances, seem to get all ready to rain, and look as though they would rain in a very short time; and yet the clouds hang over the country and finally work off without giving any rain to amount to anything. In such cases, as in the deserts and other places above referred to, no doubt the hot dry air and the dry winds prevail and carry the moisture, so nearly condensed in the clouds, to other regions.

Although these remarks apply to summer storms generally, they are especially true in regard to showers. Showers are peculiarly sensitive to local influences and attractions, and especially to those described above; and as they are the main dependence during summer droughts, every influence that affects their number and the amount of rain at any one place at once becomes important. A slight difference, to the casual observer, in the condition of the air and in the condition and amount of the winds may make all the difference between plentiful showers and none to do any good.—

Cultivator.

LILACS.

It is a matter of regret that we appear to be satisfied with the common varieties of the lilac, and that such excellent kinds as Dr. Lindley and Charles X. are not planted in preference to, or at least to an equal extent with, the commoner kinds. These are limited to three: *Syringa vulgaris*, *S. dnbia* (or *rothomagensis*), and *S. persica*, with a few of their varieties; and it is one or other of these kinds we are sure to see in our gardens or pleasure-grounds. On the Continent, however, there is no such poverty of selection. We take up at random a Continental catalogue, and there we find a very extensive list of good varieties, at such low prices that there is very little excuse for us if our ornamental plantations are not speedily the better of it. This list we reproduce for the benefit of our readers; it will serve to show to what a remarkable degree these fine shrubs vary, and we can assure our readers that many of them are more beautiful than those we grow to such a great extent.

Alba	Géant des Batailles	Président Massart
Laciniata	Général Schmidt	Prince Impérial
Rubra	Gloire de la Rochelle	Princesse Camille de
Aline Moceris	Gloire de Moulins	Rohan
Ambroise Verschaffelt	Goliath	Princesse Marie
Amora	James Booth	Professor Stœckhard
Bérange	Justi	purpurea.
Charlemagne	Karl'srnhensis	rubra insignis
Croix de Braby	König Johann	Charles X.
Delepine	Langius	Spectabilis
Doctor Lindley	Lovanensis	Triomphe d'Orléans
Docteur Nobbe	Madame Kreuter	Vallettiana
Ekchahola	Moritz Eichler	Ville de Troyes.
Flore pleno	Philémon	

THE POISON OAK.

(RHUS TOXICODENDRON.)

This trails along the ground, rooting at intervals, and should it come in contact with an oak tree, it fastens itself to it and runs up it; yet the oak is not the only tree it so tenaciously adheres to, for to other trees or walls coming within its reach it attaches itself like

ivy. The leaves consist of three leaflets, the stem attains a thickness of from two to four inches, and climbs to a height of forty feet. The poisonous effects of this plant are very great, and to some people more so than to others. To some persons the touch of the leaf is poisonous, causing an irritating eruption of the skin. Simply touching or carrying a bunch of these plants sometimes causes the hands, arms, and even the whole body, to become greatly swollen, the swelling being accompanied by intolerable pain and inflammation, and ending in ulceration. Its poisonous effects are also sometimes felt even by passing to the leeward of a bush on a windy day, or going through the smoke of a fire in which it is burning. These effects are not felt by every one, some people being able to handle this plant with impunity.

TREES IN COVENTRY.

We are glad to record that for some time past a committee has been formed for the planting of the roads near the ancient city of Coventry, and that when we last visited it considerable progress had been made in planting. The committee is composed of some of the most influential gentlemen of the town, and the planting is carried out by Mr. Dawson, the manager of the Coventry cemetery. The planting is paid for by subscription, and not more of it carried out each year than the funds in hand will admit of, so that no debts are incurred. We recommend the excellent example thus set by Coventry to many others of our towns, in which the hideousness of acres of brick is not relieved by a single tree.

SHADE.

WHEN bright sunshine prevails how delicious it is to retire to the cool and welcome shade of leafy, overhanging trees. At such a time the grandest of Deodars, or the finest of Wellingtonias, has not half the charms of the humblest oak or the most uncouth chestnut. To get beneath leafy branches, if but for a few minutes, seems to give immense relief. What inhumanity it is to turn even dumb animals into an enclosure where there are no trees to break the rays of the summer sun. Trees planted here and there, though but ever so few, would in a few years cast on the ground shadows that would be welcome both to man and beast, while the beauty of the landscape would be increased. When planting, do we think enough of the probable wants of posterity? Londoners have much to be thankful for as regards the rich umbrageous foliage that overhangs the great parks of the West End. Our forests, our woods, and groves, planted in times gone by, that they might grow into money's worth, are to us, during the heat of summer, of incalculable value. The noble oak standing just in front of my cottage, was probably planted there some one hundred years or more ago; perchance then the thought of a dwelling being near it was the last thought that entered the minds of the planters. Perhaps the land then was common, and the big tree of to-day was, after all, but a chance seedling from some grand old progenitor that has now passed the way of all that is earthly. In any case, there it is; and now when the sun pours down its rays with intense force, how grateful am I for its shade! how delightfully my little ones sport beneath its branches! how pleasant to carry out a few chairs and a table, and there enjoy in coolness and comfort the evening meal, and the "cup that cheers but not inebriates!" I am grateful for its shade. Our magnificent forest trees are the glory of our land. May our fondness for the denizens of other lands not make us forget the debt of gratitude which we owe to our forefathers for the trees and plantations which they have left us, nor neglect to keep for posterity a supply of those noble trees that are so richly endowed with the power of shade.

A. D.

Trees on the Thames Embankment.—We are glad to say the Plane trees on the Thames Embankment are now looking fresh and vigorous, and evidently beginning to grow well. Near the Houses of Parliament they seem weakest, but all the way thence to Waterloo Bridge many nice healthy young trees may be seen. It was supposed by some that the Planes would not thrive on the Embankment; but this has proved erroneous. We must confess, however, that, with Mr. Noel Humphreys, we share the opinion that in all cases of extensive street and road planting no effort should be spared to introduce as much variety as possible among the trees. There are a good many trees that thrive as well in towns as the Plane, and for many reasons, needless to enumerate here, it is desirable we should see as much tree beauty as possible in our towns.

HARDY TREES AND SHRUBS.

BY GEORGE GORDON, A.L.S.

THE SWEET-SCENTED EASTERN THORN (CRATÆGUS ODORATISSIMA).

THIS forms a low spreading, round-headed tree, from ten to fifteen feet high, with numerous branches, more or less curving downwards, and thickly furnished with declining, downy, spineless shoots. It is a native of the Levant; it is quite hardy, grows freely in any garden soil, is never injured by the larvæ of insects, and is the latest of all the thorns in leafing and flowering. It was first introduced in 1810.

The leaves, which have a hoary appearance, are more or less pinnatifid, but they vary very much in shape and size; those on the older parts and fruiting spurs are very deeply cut, with the divisions narrow, sharp pointed, and much smaller than the leaves on the young shoots; the latter are broad, less deeply divided, and more rounded, but all of them taper much to the footstalks; they are downy on both surfaces, and more or less serrated at the apex of the divisions. The stipules



Leaves, 1½ inch broad and 1¼ inch long, including the footstalk.

are rather broad and crescent-shaped, with acute serratures on the outer edge.

The flowers are rather large, white, very fragrant, and produced in compact corymbs in June. The fruit is large, globular, of a yellowish-red or coral colour, and the sweetest of all the eastern thorns; indeed, when ripe, in the end of August and September, it is very agreeable to eat. It is produced in close clusters in great abundance, in consequence of which, and its brilliant colour, it becomes very ornamental during the autumn, as it remains on until destroyed by frost.

NOTES AND QUESTIONS ON TREES AND SHRUBS.

Old Acacia in the Jardin des Plantes.—The oldest tree in this garden, the patriarch of the Acacias, called the Old Robinier, whose death was expected twenty years ago, has again resisted the cold of last winter, and a shoot has sprung out from its trunk (on which there is no bark, and which is encased in zinc), and is thriving well. This tree was brought from America, by Vespasian Robin, arborist to Louis XIII., 237 years ago.

Extracting Tree Stumps.—A Guildford correspondent of the *Mount Alexander Mail* has practised successfully the following method of removing the stumps of trees from the ground:—He sprinkles on the tops of the stumps from 6d. to 1s. worth of kerosene, and, as the stumps are seamed, weather cracked, or decayed, it soon disappears. On the top of the stumps he piles the refuse wood, and after two or three days sets fire to them, and they burn completely up, roots and all. A lad can do the work, and have scores on fire at once.

Old Oak.—There is a magnificent old oak on the Montravail estate, near Salutes. The old tree is quite hollow, but still verdant and glandiferous. On the south side there is a kind of door, and the Druidical hall inside is large enough to receive a dozen visitors to be seated on stone benches arranged around a kind of round table. M. Dorbigny, according to the approved method, boiled a sectional portion of the timber in oil, and by calculations, based on analogy, and the virtual diameter of the trunk, concluded that there were more than 2,000 rings, i.e., that the forest monarch had passed his two thousandth anniversary.

Singular Enclosure in a Tree.—A Minnesota wood-chopper hewed down a tall tree the other day, and, upon splitting up the trunk with an axe and wedge, found imbedded in the wood at a point where the trunk diverged into branches, a leather bridle of antique pattern, with bit and buckles attached, and all in a remarkable state of preservation. It has been fully thirty feet from the ground, and its presence there can only be accounted for by the supposition that some passing horseman had used the crutch of a sapling as a rest for his bridle, and, led from the place in pursuit of his straying horse, had been unable to find it again, and abandoned the bridle to be carried up and entombed by the slow growth of the tree. It is believed that the tree must have been fifty years in hiding its treasure.

Himalayan Seeds.—Having received the following seeds from the Himalayas, will you tell me how to deal with them? especially No. 6:—1, *Cedrus Deodara*; 2, *Abies Smithiana*; 3, *Pinus excelsa*; 4, *Pinus Pindrow*; 5, *Cupressus tortuosa*; 6, *Rottlera tinctoria*.—**GUILFORD.**—[The coniferous seeds should be sown at once in a light sandy, rather dry loam, and placed in a cool situation, such as in a garden frame with its back turned to the sun, shaded by a mat, and merely kept moist until they begin to grow. The *Rottlera tinctoria* is a stove shrub, the seeds of which require to be sown in heat.]

THE GARDENS OF ENGLAND.

CONIFEROUS TREES AT ELVASTON CASTLE.

ELVASTON originally possessed few natural advantages. Mr. Barron, in his "British Winter Garden," however, says, "in August 1830 I found it to possess one feature which I had neither the power nor the wish to alter." This consisted of two avenues, planted, I believe, at the suggestion of the celebrated Capability Browne, who, on meeting, by appointment at Elvaston, the grandfather of the present Earl of Harrington, somewhat startled his lordship by telling him "that it was well, and he would let well alone;" upon an explanation being demanded, he said that the place was so flat, and that there was such a want of capability in it, that he would not meddle with it, at the same time presenting to his lordship six Cedars of Lebanon, and proposing that they should be planted on the east side of the mansion. They have now grown to be large, handsome, well-proportioned trees, and form, I need scarcely say, a fine feature near the castle.

It is now upwards of a quarter of a century since I first visited the gardens and grounds of Elvaston, where I spent an agreeable day with Mr. Barron, admiring choice bits of landscape, and discussing the merits and demerits of the numerous rare conifers then planted there. At that period there were few, if any, places in Great Britain, which presented so many attractions, not only to arboriculturists and horticulturists, but also to men of taste and refinement in all ranks of life, as Elvaston. The place had then been but recently formed. Lord Harrington wanted to have a garden "second to none," and in Mr. Barron he had an accomplished and able assistant, of whom it might truly be said, "he was the right man in the right place." Large trees had been brought from all parts of England, and Mr. Barron's now well-known tree-lifting machines had been increased in size and power to suit the demands made upon them. An extensive artificial lake and a series of rockworks had been formed, of which the late Duke of Wellington said, "they were the only good imitations he had ever seen." In laying out the grounds, according to well-conceived designs, an immense quantity of evergreen trees and shrubs had been planted, particularly conifers, all of which had been used with much taste and judgment; indeed, no labour nor expense had been spared to make Elvaston what it then was—the wonder and admiration of all who saw it.

On a recent visit to Mr. Barron, at Borrowash, he kindly offered to drive me to Elvaston, an offer which was gladly accepted. Twenty-five years have rolled away, and again the gates of Elvaston are passed. The scene is changed: perhaps there are more shadows on the landscape, now the small trees have become large and the large ones larger; but the high keeping everywhere then apparent is not now so conspicuous; the fairyland is exchanged for ordinary pleasure ground; yet, not ordinary, for at every step, here, there, and everywhere, noble specimens of conifers, and other exotics from many lands, ever and anon present themselves, dressed in adult habit, telling us far more forcibly than words can do, that they are at home, and mean to become permanent denizens of these islands. Soon after our arrival we were fortunate enough to meet with Mr. McKellar, the enthusiastic and intelligent young gardener who presides over the garden establishment there, and who kindly showed it to us. During a somewhat hurried visit, I noted the following conifers as being likely to prove useful, either as ornamental or timber trees:—

The Douglas Fir (*Abies Douglasii*): In great numbers, from 60 to 70 feet in height; coning abundantly, which few of the newer conifers are doing this season; in perfect health, except where much exposed, or where the tops rise above the surrounding trees.

Menzies' Spruce (*Abies Menziesii*): From 40 to 50 feet high; in fine health, although not growing with the vigour, and wanting that rich silvery appearance which it has in more elevated and mountainous situations, particularly when the soil is rich and deep.

The Eastern Spruce (*Abies orientalis*): About 25 feet high; this is likely to prove of more importance as an ornamental than a timber tree. In a deep, damp soil, it is very beautiful,

and forms a fine lawn or avenue tree; in thin, poor soils, it soon becomes scraggy and unhealthy.

Chili Pine (*Arucaria imbricata*): From 30 to 40 feet in height. This unique tree has long been associated with Elvaston, where, except the fine specimen at Dropmore, perhaps the finest in England used to grow. The severe winter of 1861-62 injured some of the best specimens, but many remain in perfect health, some of which are bearing a few cones this season.

The Deodar (*Cedrus Deodara*): From 40 to 50 feet in height. Likely in good localities to prove a timber tree, and, wherever it thrives, a really ornamental one. It is seldom seen fine in exposed situations, or in very poor soil. At Elvaston it is generally healthy, and still retains a habit distinct from that of the Cedar of Lebanon, which, in its adult state, it is said to very much resemble, if it does not prove to be altogether synonymous.

Japan Cedar (*Cryptomeria japonica*): From 30 to 40 feet high. This species is somewhat more spreading than many other conifers, the diameter of its branches being equal to about half its height. The tree has a very distinct and pleasing appearance, and forms wood freely.

The Cephalonia Silver Fir (*Picea cephalonica*): From 30 to 40 feet in height. This fine species is to be seen here in fine health, although slightly spring-tender when young; consequently, it should be grown in a shaded situation till it reaches above the frost line, four or five feet in height; afterwards it is quite hardy; even here, in this inland county, no indications are to be seen of its suffering from late spring frosts. As a timber, as well as an ornamental tree, this fine fir is likely to prove really important.

The Noble Silver Fir (*Picea nobilis*): From 40 to 50 feet in height. At Elvaston, as almost everywhere else, this grand tree stands out conspicuously; its massive pyramidal form, and rich blue-green and glaucous hues, at once arrest the attention of even the untutored, as well as the cultivated eye; and, when seen in full health, loaded with large cones, it leaves an impression such as few other trees do. For an avenue it is one of the most beautiful conifers in cultivation. This species should be used by all who are engaged in planting, whether for ornamental purposes, nurseries, or timber trees; the grandeur of its appearance, the rapidity of its growth, and its adaptability to our soil and climate will always justify such a procedure.

The Spanish Silver Fir (*Picea Pinsapo*): From 30 feet to 35 feet in height. This beautiful and well-known species is growing here with unusual vigour, and although it forms wood somewhat slower than its congener the *P. cephalonica*, it is a still more valuable ornamental tree, which should be planted wherever such is an object.

Nordmann's Silver Fir (*Picea Nordmanniana*): Mr. Barron specially directed my attention to the original specimen of this first introduced to this country, and which was sent to him about thirty years ago, with a plant of *Pinus Strobus nivea*, by Mr. Frederick, then amanuensis to the late Mr. Loudon. It was three years at Elvaston before the late Dr. Lindley would admit that it was in the country. Owing to the plant having encountered a series of accidents it is not now much more than twelve feet in height, but it is in perfect health.

Black Austrian Pine (*Pinus austriaca*): A dark-looking, strong-growing, extremely hardy tree, likely to prove invaluable for planting as a nurse or for forming a background in exposed situations. As a timber tree it is not likely to prove of much value, owing to its forming so many large branches.

Cembrian or Swiss Pine (*Pinus Cembra*): This grows here from 35 feet to 45 feet in height, is very healthy, and appears to luxuriate in the deep loamy soil of the district.

The Bhotan Pine (*Pinus excelsa*): From 30 feet to 40 feet high. This pine, in general appearance, somewhat resembles the Weymouth Pine, but is larger in all its parts, and less formal and regular in its habit. It is very fastidious as to soil and situation; here it forms a fine tree.

Lambert's Pine (*Pinus Lambertiana*): From 30 feet to 40 feet high. This species, like the *P. excelsa*, is somewhat fastidious as to soil and situation; where it succeeds well, it is a noble tree. At Elvaston it thrives tolerably well, and is likely to form a grand tree.

Corsican Pine (*Pinus Laricio*): From 50 feet to 60 feet in height. There are perhaps none of our recently-introduced coniferous trees which are found to thrive in such a variety of soils and situations as the Corsican Pine; as a nurse or timber tree its importance can hardly be overrated.

Pinus macrocarpa: From 40 to 50 feet high. Because this fine tree does not thrive—indeed, will scarcely live—in some parts, an opinion, held by many, that it is not hardy prevails to some extent. A visit to Elvaston will at once remove this impression; there it is to be seen in fine health, and generally this is the case when grown on a rich, deep, rather damp, than dry soil, particularly where the situation is moderately sheltered.

Tartarian Pine (*Pinus Pallasiana*): From 30 feet to 40 feet in height. A fine hardy strong-growing tree, with dark shining leaves, growing in a great variety of soils, but thriving best in a warm deep loam. It does well at Elvaston, and promises to be a useful timber tree.

Heavy-Wooded Pine (*Pinus ponderosa*): From 40 feet to 50 feet high. This noble tree, like the *P. macrocarpa*, prefers a deep strong soil, and where it succeeds is an object of great interest. At Elvaston it is in fine health.

Pyrenean Pine (*Pinus pyrenaica*): From 30 feet to 40 feet in height. This is a hardy free-growing species, with dark green glossy foliage, and reddish-yellow bark on the young growths when matured; altogether a useful tree, whether planted for ornamental, nursing, or for timber purposes. It thrives in all moderately good soils; at Elvaston it is in perfect health.

Variegated Pinaster (*Pinus Pinaster variegata*): There are two or three of the finest specimens of variegated Pinasters here I have ever seen; in most cases the variegation is irregular and limited in amount, and, as the tree extends its growth, is often thrown off altogether; here it predominates, and is said when in full leaf to have a fine appearance. The trees grow within a short distance of the mansion and should be observed by visitors, being conspicuous among the many rarities which enhance this interesting domain.

Taxus baccata aurea: Those who have any doubt about the wonderful effects on landscape produced by variegated plants should see what is done by means of the variegated yew at Elvaston, where it is extensively and most successfully used to light up and relieve the darker evergreen masses with which it is associated. At this season of the year it is remarkably fine, and probably the wet season has had something to do with its unusually rich appearance.

I would have liked to have said something about the numerous old yews, which have been brought here from great distances, some of them many centuries old, and each having an interesting history of its own, linking the present with the past, and giving an interest to the place which it could not otherwise possess; but I prefer that some one else should undertake the task.

I have now only to express a wish that others may meet as hearty a welcome, and enjoy the rich arboreal treat which Elvaston presents, as much as I did, when they visit this still fine place.

ARCHIBALD FOWLER.

Castle Kennedy, Wigtonshire,

Allotment Gardens at Coventry.—There are from eight hundred to one thousand gardens around Coventry, from about one eighth of an acre and upwards to an acre each, some few being larger. They are sought after and much prized by their occupiers, as they afford them much healthful relaxation and pleasure, besides adding in no small degree to the healthy condition of the inhabitants generally, a fact borne out by the low death-rate of Coventry, as compared with many other large cities, Coventry being generally third in the Registrar-General's quarterly report. The walks between the gardens are much frequented.—D.

"A FEW days ago," says the *New York Daily Bulletin*, "some of the most sentimental brokers doing business upon the Stock Exchange made up a pool of a small amount, by subscribing 25 cents each, for the purchase of a terra cotta vase, which was placed upon the large table in the Exchange, to be filled with fresh-cut flowers every morning by Mr. Alexander Stewart." The entire arrangement, in fact, was made at the instigation of Mr. Stewart, who has adopted this method of humanizing the board. It is stated that the brokers readily handed in their contributions, particularly the young ones, many of whom remarked that the flowers would remind them of the green fields of their youth, and of the days when they were young and innocent.

PUBLIC GARDENS.

THE VILLA PAMPHILI DORIA, ROME.

BY NOEL HUMPHREYS.

THE Villa Pamphili Doria is one of the most important of the many villas which embellish the suburbs of Rome. Its attractions are perhaps superior to those of the famous Villa Borghesi, though its greater distance from the central parts of the city, and the reputed unhealthiness of its situation, causes it to be much less frequented as a popular promenade. Most of the villas of the Roman nobles are open to the public, the customs of ancient Rome being followed by the rich denizens of the modern city in that respect. The gardens of the stern Sylla were free to the citizens of Rome, as were the more luxurious and splendid ones of Lucullus; and

highly-decorated gardens which they created having been thrown open, with very few restrictions, to the public.

The Villa Pamphili Doria was created by the wealth of Pope Innocent X. (a Pamphili), whose extraordinary devotion to Olimpia Maldachini forms one of the leading traits in his career. It is difficult to account for the great influence of this lady, except on the supposition that her intellectual powers were of a very high order, for her mere personal charms were certainly not remarkable, if we may trust the portrait which forms one of the chief objects of attraction in the small but select picture gallery of the elegant palazzo.

The entrance to the ornamental grounds, highly decorated with architectural dressings and enriched with statuary, commands a view of the palazzo, or rather palazzetto, which is a very elegant structure, though on a restricted scale. Its exterior is almost entirely encrusted with antique reliefs of



View in Gardens of the Villa Pamphili Doria, Rome.

Shakespeare has made Mark Anthony tell us how those of Cæsar were bequeathed to the public:—"Here is the will: and under Cæsar's seal," says the speaker, addressing the citizens, over the body of Cæsar,—

"He hath left you all his walks,
His private arbours, and new-planted orchards,
On this side Tiber: he hath left them to you,
And to your heirs for ever; common pleasures,*
To walk abroad, and recreate yourselves."

The Popes, who were the modern Cæsars, were, as a rule, the creators of the most beautiful casinos and villas that embellish the suburbs of Rome, and they have been scarcely less generous than the great Dictator himself, nearly all of the

exquisite workmanship. So exquisite are many of them that one cannot but regret that such unique and remarkable specimens of ancient art, of the very highest class, should be thus exposed to the gradual but certain destruction which exposure to the action of weather and seasons, even in the soft climate of Rome, will eventually insure.

The extensive grounds of this elegant *delizia* are extremely beautiful, and from one part there is a distant view of St. Peter's, with a foreground of green slopes studded with stone pines, aloes, and evergreen oaks, which few of the landscape painters who visit Rome omit to transfer to panel or canvas. Many of the alleys and shrubberies remind the visitor of the famous Bosquet of Versailles, as do the finely designed fountains, though on an infinitely smaller scale. The casino or palazzetto itself also recalls Versailles, and one cannot help feeling that the chief architect of the enormous palace of the

* Pleasures, or Plaisances; that is to say, pleasure-gardens, as distinct from orchards and vegetable gardens.

great French king must have very closely studied its architecture during his stay in Rome, and have taken away with him careful sketches of the palace summer-house of the Villa Pamphili Doria.

The groups and groves of stone pines, those picturesque firs of the south, are among the most distinctive features of these elegant park-gardens; and in late autumn pleasant picnics are often formed beneath them, when many (almost too many) *fiasechetti* of Orvieto wine are emptied, to which the nibbling of the delicious *pinelli*, (the kernels of the fallen cones) forms a pleasant accompaniment. I remember such a party, I will not say how many years ago; but it was when Gregory XVI. was Pope, and we were all very merry, very witty, and a very enthusiastic party, the hours then passed were very sweet ones, but their recollection is bitter, for few now remain of those who made them so pleasant.

LADY CORISANDE'S GARDEN.

"How I hate modern gardens!" said St. Aldegonde. "What a horrid thing this is! One might as well have a mosaic pavement there. Give me cabbage roses, sweet peas, and wallflowers. This is my idea of a garden. Corisande's garden is the only sensible thing of the sort."

"One likes a mosaic pavement to look like a garden," said Euphrosyne, "but not a garden like a mosaic pavement."

"The worst of these mosaic beds," said Madame Phœbus, "is, you can never get a nosegay, and if it were not for the kitchen garden we should be destitute of the gayest and sweetest of creations."

"Corisande's garden is since your first visit to Brentham," said the Duchess to Lothair. "No flowers are admitted that have not perfume. It is very old-fashioned. You must get her to show it you."

It was agreed that after breakfast they should go and see Corisande's garden; and a party did go—all the Phœbus family, and Lord and Lady St. Aldegonde, and Lady Corisande, and Bertram, and Lothair.

In the pleasure ground of Brentham were the remains of an ancient garden of the ancient house that had long ago been pulled down, when the modern pleasure grounds were planned and created. Notwithstanding the protests of the artists in landscape, the father of the present duke would not allow this ancient garden to be entirely destroyed, and one came upon its quaint appearance in the dissimilar world in which it was placed as you might, in some festival of romantic costume, upon a person habited in the courtly dress of the last century. The duke had given this garden to Lady Corisande, in order that she might practice her theory, that flower gardens should be sweet and luxuriant, and not hard and scentless imitations of works of art. Here, in their season, flourished abundantly all those productions of nature which are now banished from our once delighted senses; huge bushes of honeysuckle, and bowers of sweet peas, and sweet briar, and jessamine clustering over the walls, and gilliflowers scenting with their sweet breath the ancient bricks from which they seemed to spring; there were banks of violets which the southern breeze always stirred, and mignonette filled every vacant nook. As they entered now, it seemed a blaze of roses and carnations, though one recognised in a moment the presence of the lily, the heliotrope, and the stock. Some white peacocks were basking on the southern wall, and one of them, as the visitors entered, moved and displayed its plumage with scornful pride. The bees were busy in the air, but their homes were near, and you might watch them in their glassy hives.

"Now, is not Corisande quite right?" said Lord St. Aldegonde, as he presented Madame Phœbus with a garland of woodbine, with which she said she would dress her hair at dinner. All agreed with him, and Bertram and Euphrosyne adorned each other with carnations, and Mr. Phœbus placed a flower on the uncovered head of Lady St. Aldegonde, according to the principles of high art; and they sauntered and rambled in the sweet and sunny air, amid a blaze of butterflies and the ceaseless hum of bees.—"*Lothair*."

Meetings in the Parks.—Henceforth, in all parks under the management of the Commissioners of Works, including Holywood and Linlithgow, no one will have the semblance of right "to deliver, or invite any person to deliver, any public address, except in accordance with the rules of the park, which rules are to be first laid before Parliament." It is understood that, in accordance with this provision, certain spots will be set apart for public meetings, and anyone addressing public meeting held in any other part of a park will be liable to a penalty of five pounds.

VEGETATION IN TOWNS.

BY WILLIAM HINDS, M.D., &c.,

Professor of Botany, Queen's College, Birmingham.

ONE of the first facts we have to meet is that we supply plants and trees with a positively enormous quantity of food—that class of food from which nearly all the solid parts of plants and trees are derived. I do not refer, of course, to the water or to the ammonia, but to the carbonic acid, which must be furnished in the water. Professor Herepath estimated that about 12.7 oz. of carbon are daily converted by an adult into carbonic acid. Professor Helmholtz estimated the amount as on an average about 16 oz. Now 12.7 oz. produce, when oxidised into carbonic acid, about twenty-five cubic feet, and 16 oz. would give more than thirty cubic feet. The human beings in Birmingham alone number about four hundred thousand, if not more. This, without counting animals, would give us twelve million cubic feet per diem of carbonic gas for Birmingham. But this is far from the full aggregate, for we have to add to this sum that which is produced by every gaslight, every fire, and every other full oxidation of carbon. From fifteen million to twenty million cubic feet of carbonic acid must then be produced daily in this large community. A second fact is that this gas, which feeds the plants and trees, is a deadly gas so far as animal life is concerned, and must be got rid of effectually if we are to live and breathe, and retain and enjoy health. Nay, even when diluted with 80 per cent. of common air it is fatal to animal life. A dilution to the extent of 90 per cent. with common air gives a mixture injurious to animal life, and cannot be breathed without injury. What, then, becomes of this enormous sum of fifteen million or twenty million cubic feet of carbonic acid produced every day? No doubt it becomes gradually diffused; and well it is so, or we could not live a single hour in our ordinary circumscribed atmosphere. It must be thus partially removed from the sphere of animal respiration, but it is not effectually done, or even half done, under the present arrangements of society; and decadence of health too often from this unsuspected cause results. But, even when diffused, it is not destroyed. It still exists in the atmosphere, especially in the neighbourhood of and in crowded communities, and it can only be effectually got rid of by vegetation, and vegetation on a large scale in and in close proximity to towns. A third fact now meets us, namely, that we in towns are doing all we can to kill the very agents on which we depend for our lives and our health. Animals die without a constant supply of oxygen; vegetables die without a full and free supply of carbonic acid. Every city and every town in this kingdom is, however, engaged in the process of suffocating plants with their smoky and intolerable atmospheres. The moment any plant is introduced, a gradual process of suffocation commences, and this is followed in some cases by rapid death, or, if not, by a sickly decadence. This is as effectually done as if animals were prevented from exhaling the carbonic acid from their lungs, either altogether, or else partially prevented, as human beings are when they breathe an atmosphere previously contaminated with five, ten, or twenty per cent. of this deadly excrementitious substance; or when the larynx or bronchial tubes are physically obstructed. But for this one condition, we might have plants and flowers and trees growing in every locality, or in every corner of this crowded town, and these would relieve the inhabitants of the refuse and deadly acid which is often so unsuspectingly hurtful or fatal to health. The breathing or respiratory mouths of the leaf, on the average, number, we may calculate, about sixty thousand on every square inch of the under surface, or sixty times as many as the sudoriferous pores of various portions of the human skin. A fairly large leaf of the rhododendron would give about ten square inches of surface below. We should thus get in one leaf on its under side alone about six hundred thousand pores, and which excrete oxygen, and act as ordinary exhalents. These breathing and exhalent orifices are very small, and therefore much more easily obstructed by those minute particles which constitute the subsequent pellicle of smoke—soot. Smoke is, of course, sooty carbon in a very minute state of division, and the more impalpable and fine the particles the more effectually does it cover the breathing pores with an obstructive if not impenetrable layer. The rain, even when free from soot, which indeed it seldom or never is, in towns, does not clear those pores, because the upper side of the leaf is much less abundantly furnished with pores than the lower. No doubt Nature arranged that in this way dust and dirt should not act so much as obstructions. But even dust and dirt merely would not very materially injure a plant exposed to light and rain freely, with the other known requirements. They are not like the thin penetrating fatal film deposited by smoke. To a certain extent the trees in all our very immediate suburbs, which are evergreen, or retain their leaves through the winter, may be shown to have a slight deposit of smoke, not so much, however, in the suburbs as to very severely injure the plant. Leaves in the botanic

garden at Edgbaston, just a mile from the centre, will be found somewhat contaminated, and the smoke may be wiped off or washed off. Some plants are like delicate children, and the first decadence is perhaps one of rapid death. Other plants are hardy or less tender, and seem resolved apparently to die hard. It is a question of degree and variations in the several conditions; and none of the facts at all subvert those relentless conditions and laws by which the Allwise Creator has accomplished His wonderful designs and will. What can be done? What remedies have we in our power? These are multitudinous; but we have many questions to deal with as to sanitary laws. The dense accumulation of people in a very large town produces much poverty, disease, death, squalor, filth, and other evils. Surely it could never be intended by nature that human beings should collect themselves and their habitations so closely together as to shut out life often, and especially the means of breathing an atmosphere consistent with life, and even seeing something of the other works of nature besides themselves. The dense accumulations of large towns is a fatal mistake, and a fatal evil. Gradually this dire evil must practically force itself upon the notice of civilised nations, and in spite of the overbearing tendencies to concentration, the future policy of every wise people will perhaps inevitably be, and certainly should be, dispersion, and thus further the aim of the Creator when He made the world of life strictly relational in its departments, and left the intelligence of His creatures to find out and carry out His all-wise, beneficent, and sovereign will.

THE CLOTHING OF COTTAGES.

Few things are more incongruous in landscape scenery than the garish glare of a new cottage, or the bald walls or bare tiles of an old one. Cottages are frequently indispensable as lodges, gardeners' residences, and even for ornament. But it is comparatively seldom that they are well managed, and made to fit in to and even contribute to the richness and beauty of a landscape. In most cases they are planted, or rather smothered out. A thick blind of trees and shrubs is got up to shut out the cottage and shut in the inmates. This renders a dwelling unwholesome, and also deprives a landscape of a very enjoyable feature, that of habitability, if I may so call it. The rising smoke from the chimneys, the light and sound of living beings, all add new features and charms to a landscape. Hence, where cottages exist, within or near the grounds belonging to an estate, they should be made worthy of the position, and made to harmonise with it. Sometimes a slight or considerable change in the buildings themselves will be needed; a new front or end, or chimney, a tower, rustic or otherwise; a flagstaff, a castellated roof, or a gable end, &c. In others, nothing is needed but the judicious clothing of the walls with ivy, clematis, roses, jasmines, &c., as in our woodcut. A few trees planted, and a rustic fence, as here shown, are very effective. This mode of partially revealing the house is very pleasing. The walls, roofs, and chimneys even can be wreathed or embowered in green, contrasting charmingly with the windows and their white blinds. Lodges seldom look so well as when treated in this manner. They thus form a green link, alike refreshing and pleasing, between the dusty public road and the finely



Gate Lodge at Smeethleyton, ornamented with Climbers.

timbered park and polished pleasure-grounds of the country mansion. It would be well for the health, comfort, and happiness of many gardeners, as well as for the further adornment of many charming landscapes, were gardeners' houses removed from the back sheds, where so many of them are placed, and erected, as features of interest and beauty, on some of the best spots of the pleasure-grounds. D. BURY.

THE INDOOR GARDEN.

THE BLUE LESCHENAUTIA.

ALTHOUGH this is one of the finest and most generally admired of greenhouse plants, and one which, when well managed, remains in beauty longer than most of our greenhouse favourites, yet it rarely happens that we see it in anything like perfection. It is a first-class plant for decorative purposes, as well as one of the most effective for exhibition; and no plant with which I am acquainted better repays the trouble necessary to manage it properly. There are two varieties of it in cultivation, the best of which is known in the trade as biloba

major; and I would advise persons commencing its culture to procure that kind in preference to the other, for its blooms are larger and produced more freely under similar treatment; both, however, are beautiful plants, well deserving a place in every collection.

In commencing the culture of this plant, procure nice young specimens from some nursery, and in selecting them, choose such as have a clean healthy appearance, and are strong and stocky and not over-potted. As soon as the plants can be procured, they should be repotted and placed in an intermediate house where a temperature of from 50° to 60° is maintained, placing them near the glass and encouraging growth; give air on the sheltered side of the house

on every favorable opportunity, but avoid ventilating so as to cause dry cold currents. As they progress, attend to stopping the stronger shoots and tying out the branches as may be necessary to secure a compact regular growth. Plants obtained in March, and which have done well, will be ready for a second shift by this time, and if all goes well, the plants will have taken to their second shift by the middle of August, and will then be nice half specimens.

To prepare these to stand a damp and sunless winter must now be attended to. They should be gradually exposed to a free circulation of air, removing them to a cool dry house for a week, and then placing them out of doors for a fortnight or three weeks, which will ripen and harden the wood and render them much less liable to suffer from damp during the winter; while out of doors they must be laid on their sides if heavy rains occur, and be carefully watched, so as to guard against the soil getting saturated, and, if wet weather should set in, the plants had better be placed under glass, allowing them all the air possible. During winter they should be placed in a cool house where the temperature will not exceed 40°, keeping them near the glass and giving air whenever the weather will permit; but this should not be done so as to cause currents of cold air to rush through the plants. Except on very mild days air should be given on the sheltered side of the house only; drip, too, must not be allowed to fall on the plants. If, during damp weather, the foliage shows any tendency to fog off, a little fire-heat should be applied, giving air at the same time to dry the leaves.

Treat the plants the second season exactly as has just been recommended, taking care to stop any over luxuriant shoots, and to put them nicely into form before starting into growth in March. By the end of the second season they will be fair-sized specimens, and should be placed out of doors early in August; for, unless the young wood is ripened, there will be little chance of their blooming. In my opinion it is better to have a moderate-sized plant covered with bloom than one twice as large with only a few straggling flowers on it.

The soil in which I have found this plant to do best is good fibrous peat, nicely broken up, mixed liberally with silver sand. Care should be taken to have the ball in a properly moist state, and also the fresh soil in as nearly as possible the same condition as to moisture; the new soil should be regularly and rather (but not over) firmly pressed about the ball. Care should also be exercised to secure perfect drainage, and this should be done by nicely arranging a moderate quantity of thin crocks and covering them, so as to effectually prevent the fine soil from stopping up the drainage.

I have said nothing about watering, but the proper application of this is a very important point with respect to securing success in the culture of this plant. When in an active growing state, a liberal supply is required, but the soil must never be saturated; and, when the season's growth is completed, the plant should be very sparingly supplied with water; and, in winter, I find it good practice when the plants are dry to place them for an hour in a pan filled with water, so that the crocks may be covered. This feeds the active roots and moistens the bottom soil without saturating the mould towards the surface where the thick fleshy roots are, and which are liable to suffer from excess of moisture at any season, particularly in winter. I have also said nothing about shading during summer, but I suppose that nowadays I need not say that it would be hopeless to expect vigorous growth from a plant exposed to the full influence of the sun's rays in a dry atmosphere deprived of the health-giving influence of night dews. I need hardly state, likewise, that if free rapid growth is expected shading must be applied as early in the season as the weather, &c., may render advisable, and constant care must be exercised to maintain a moist atmosphere during dry weather. This should be done by sprinkling the passages and not by syringing the plants overhead, which ought only to be done during the summer months, and then only in the evening and when the weather is very bright and dry; and neither shading nor moisture should be used in excess unless large plants without bloom should be desirable.

W. M.

STAPELIAS, THEIR CULTURE AND THEIR PECULIARITIES.

READ BY J. CROUCHER, AT THE BIRMINGHAM CONGRESS.

To attempt to interest and instruct with a few notes on these old garden favourites may appear to some like a retrograde movement in these days of Cattleyas, Odontoglossums, and Masdevallias; yet there are those in the horticultural world who, like myself, are pleased to hear of old plant friends; I, therefore, venture to say a few words about Stapelias.

Natives of the Cape of Good Hope, Stapelias are greenhouse subjects. Though easily grown many fail with them, saying they grow well for a time, and then decay. This I attribute to the climate they come from not being understood, and the common practice of taking it for granted that as they get a dry season, it must be during our winter; so they are allowed to shrivel, the result of which is, that when they should grow in spring, the bottom often decays, and the plants get over it just in time to be served in the same way again. Now every observer of Cape plants knows well that they have a tendency to grow freely during our winter, and though this growth may be retarded it must not be arrested; therefore Ixias, Pelargoniums, and Heaths are exposed to all the light we can get, while the Stapelias are put on some out-of-the-way shelf. At the time we are getting our dulllest and coldest days the Stapelias at the Cape are getting their brightest and hottest; therefore we ought to give them all the light possible, and as much heat as is compatible with it. Like other Cape plants, they don't like fire-heat, therefore they should be kept as far from the pipes as convenient; they stand the winter and flower better, if exposed to the open air from June until September. It is best to strike fresh stock every season, taking the branches off at a joint to prevent danger of decay and escape of sap. April and May are the best seasons; put them in close to the edge of the pot, and keep them dry for a week, when water may be given; after which, give it when quite dry. If they are well exposed to the sun they will strike in three weeks. Seed should be sown as soon as collected, or its vitality will soon be gone. Sow in shallow pans in light soil, and put them on gentle bottom-heat; as soon as well up, put them on a shelf close to the glass, not potting off until well grown, as they often stand still for some time or die. Almost every one who has written on these plants recommend sandy soil for them, but I find they grow best in a solid soil. Three parts loam, and one broken brick, is the best, excluding sand or manure; in this soil, with small pots, they grow freely, and though we have one species called *S. europæa*, or *italica*, yet I have seen it luxuriating above its natural growth in a temperature of 100° Fahr. Seeds for transmission should

be put into sealed bottles, or oiled paper. The plants are very difficult to import; the best plan is by means of a small wooden box, using dry sand for packing material. I have seen many ways employed, the last of which was sugar; but when opened, I must say they looked anything but sweet. Many of the section *Orbea* do very well on rockeries in summer, but they won't stand frost.

For diversity of structure, and development of the flower, I think the different species of Stapelia are very interesting, and though modern botanists persist in quashing Haworth's divisions, I like them. If we allow Cattleyas and *Lælias*, or *Oncidiums* and *Odontoglossums*, to stand distinct, I think the Stapelias should also be separated. If we would study any set of plants minutely, we must have subdivisions. In a genus containing seventy—eighty species, the first thing asked concerning any one of them is, to what group does it belong? And to me it appears easier to say *Huernia* or *Orbea*, than subgenus *Orbea*, &c. In *Stapelia grandiflora* and *S. hirsuta* we have pubescent stems and hairy flowers, a five-partite reflexed corolla, the centre plain, and the corona which protects the stigma parted into ten lobes, five spreading outwards, the other five, which include the anthers, incurved. In the section *Orbea*, to which *S. variegata* and *S. bufonia* belong, the whole plant is glabrous, the corolla is reflexed, and round the centre is a raised part, resembling the top of a leaf, the corona is raised in elegant tiers, like that of a crown, distinct from the former. In *Huernia* we have a campanulate corolla, cut into ten segments at top, the inside clothed with glandular hairs, and the corona spreading like teeth; the arrangement of the ligules give interest to each section.

It is a well-known fact that these plants evolve a strong carrion-like scent, and the common blowfly, being deceived thereby, deposits, its eggs amongst the hairs of the flowers of *S. hirsuta* and the allied species, in which section the scent is strongest; but I have not noticed them in the smooth kinds. As soon as they are hatched they begin to search for food, and, as a matter of gravitation, go down hill. The pollen masses being clammy, and the aperture leading to the stigma being so small, the pollen couldn't possibly get to the stigma unless by artificial aid; here the maggot becomes of use: the source of the scent being the stigma, the maggot, in its endeavour to get down the aperture, forces the pollen into the stigma, and thus fertilises it. This I have watched often with much interest; here also we see the use of the hairs—were it not for them the young maggots would get blown away by the winds. It may be asked, how do those get on that have no hair? On examining them, it will be found that the apertures are larger. It has been said that Stapelias are not fertilised by the pollen of the same flower, but I have seen seed on a plant that had but one flower, and the seedlings came true.

The species called *S. europæa* is said to be a native of Europe, but I have often received it from South Africa, and I know of no plant, excepting our own thistle, more likely to cross the sea during a storm of wind.

THE FRUIT GARDEN.

FRUIT TREES IN PLEASURE GROUNDS.

BY PETER GRIEVE.

It may be said with truth that there are few objects more beautiful and interesting during the spring or early summer months than our common cultivated fruit trees: and there really does not appear to be any good reason why the fruit garden should not constitute a necessary portion of the policy or pleasure grounds of every country mansion. What can be more beautiful than the apple, the pear, the plum, and the cherry tree in full flower? And they are, in fact, exceedingly interesting objects at all seasons. But it rarely happens that they are placed in positions where their beauty can be appreciated and enjoyed. They are too frequently to be found in the vegetable garden, where they are entirely out of place (unless it be in the form of espaliers or cordons), or they may possibly be found in a somewhat neglected and out-of-the-way locality known as the orchard. But as an advance or an improvement upon this state of things, might not these useful and ornamental trees be cultivated with more pleasure, and at least equal profit, in a tastefully-designed garden or compartment by themselves, and forming at the same time an essential part of the pleasure grounds? Clumps or groups of varied forms and dimensions could be formed of pyramidal or otherwise trained apple, pear, plum, and cherry trees, &c., which might be margined by low single cordons of their respective kinds, while single standard trees of various sorts might in suitable situations be allowed to assume their natural habit and dimensions—the whole area to be traversed by winding and comfortable walks, to afford every facility for the examination and enjoyment of the beauty of the various fruits in all stages of their development. Altogether I am inclined to think that by adopting some system of grouping such as I have endeavoured to describe, and by adhering to an arrangement which would associate the fruit garden with the pleasure ground in such a manner as to constitute, as it were, a necessary and important portion of the same, and to some extent effect a combination of the *utile* with the *dulce*, we could hardly fail to give additional interest to the surroundings of a country mansion or residence at all seasons of the year.

Orchard Houses.—I have been often asked why I insist so much on solid soil for fruit trees. There is a good deal that is not included in our philosophy, but perhaps the reason is not difficult to find in this case. Loose rich soil is traversed easily by roots, and trees growing in it make strong vigorous shoots. Such shoots are not what we desire in fruit trees. Short-jointed, hard, well-ripened wood is what is requisite for fruit-bearing trees. Then, again, roots near the surface, within the reach of air and sun, are always considered necessary for the production of fruit buds and well flavoured fruit; whilst tap roots, striking deeply into the subsoil, are productive of strong and vigorous branches. Does it not follow that if the surface roots are injured by digging, the uninjured tap-roots will be encouraged? In most gardens I think much labour is worse than thrown away in digging, where the hoe and rake are the only tools which ought to be used. If fruit trees were planted in quarters by themselves, in place of being dotted about all over the kitchen garden, it would be a great improvement. My standard peaches, which are growing in soil as hard as a pathway, which has never been disturbed since they were first planted, now nearly twenty years since, are now full of fine fruit. These trees bore about fourteen dozen of fruit each tree last season, and are quite as full now, and have only missed fruiting once since they were planted.—*J. R. PEARSON, Chilwell.*

Nails in Fruit Trees.—We give the following from a Canadian paper, for what it is worth:—A singular fact, and one worthy to be recorded was mentioned to us a few days since by Mr. Alexander Drake, of Albemarle. He stated that whilst on a visit to a neighbour, his attention was called to a large peach orchard; every tree was totally destroyed by the ravages of the worm, with the exception of three, and these were most thrifty and flourishing peach trees. The only cause of their superiority known to his host was an experiment made in consequence of observing that those parts of worm-eaten timber into which nails had been driven were generally sound. When his trees were about a year old, he had selected three of them, and driven a tennenny nail through the body, as near the ground as possible. Whilst the balance of his orchard had gradually failed, and finally yielded to the ravages of the worms, these three trees, selected at random, treated precisely in the same manner with the exception of the nailing, had always been vigorous and healthy, furnishing him at that very period with the greatest profusion of the most luscious fruit. It is supposed that the salt of iron furnished by the nail is offensive to the worm, whilst it is harmless, or perhaps beneficial, to the tree. A chemical writer on this subject says: "The oxidation or rusting of iron by the sap, evolves ammonia, which, as the sap rises, will of course impregnate every part of the foliage and prove too severe a dose for the delicate palate of intruding insects." This writer recommends driving half-a-dozen nails into the trunk. Several experiments of the kind have resulted successfully.

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

The Finchley Vine.—The old vine in Kay's nursery, at Finchley, is now in fine condition, and many interested in grape-growing would be much gratified in seeing it. Considering the usual size of the bunches, as well as the size of the vine, it is the most remarkable vine near London.

How to Save Strawberry Seed.—Procure some good blotting paper, on which mash your berries; the juice will be absorbed, and the pulp and seeds will remain on the surface of the paper. Place the latter in a dry sunny place, and in ten or twelve days your seeds will be perfectly dry and ripe. Then sow them very shallow in a nicely prepared bed, which must be kept moist. In from two to four weeks your plants will be up, when, as soon as large enough, they can be transplanted.

Influence of the Stock on Pears.—Some time ago, Mr. Tillery, of Welbeck, sent us some fine fruit of the Grosse Calabasse pear, as a sample of the change produced by the stock on the graft. "They were gathered," said Mr. Tillery, "from some grafts of the Calabasse put on a Beurré Superfin two or three years ago. It is well known that the Beurré Superfin is one of our best flavoured of pears; and in this instance it has communicated a better flavour to the Calabasse. I have sent likewise some specimens of the Calabasse grown in the same soil and aspect as the grafted ones, to show the long shape and the greenish russet that the Calabasse usually presents."

Saving Barked Fruit Trees.—The method is to graft five or six scions as large round as a goose quill, and long enough to reach over the girdled place into the tree. The live bark is first notched above and below the girdled portion, the sprouts spring into place, and the ends fastened with wax. These scions grow rapidly, and in time spread over the whole girdled surface. Apple trees completely girdled, and having the bark taken off over a foot in width on one side, have been saved in the above manner. Mr. Lemmel Town, of Nashua, New Hampshire, we believe, was the first to act upon and suggest to others the idea.—*Canada Farmer.*

Walls or Glasshouses for Pears, Plums, and Cherries?—I am building a house in the country, and propose to make a fruit and vegetable garden of about 1 to 1½ acre in extent, in form a parallelogram. Would it be advisable to enclose it with walls for my fruit trees? or would it be more profitable to expend the money I propose to lay out on glass houses? The fruits I am most anxious to have are pears and plums of various kinds, and cherries. Peaches and nectarines are too uncertain.—*DEVONIAN.*

Pears for the West of England.—Will you or any of your readers kindly advise me what kinds of pears are the best for planting in this part of England?—*S. K., Somersetshire.*—[Doyenné d'Été, Jargonelle, Williams's Bon Chrétien, Louise Bonne of Jersey, Comte de Jany, Conseiller à la Cour, Doyenné du Comice, Passe Colmar, Winter Nelis, Josephine de Malines, Easter Beurré, Bergamotte d'Espéran, Beurré Giffard, Beurré Superfin, Thompson's, Glout Moreceau, Knight's Monarch, and Ne Plus Meuris.]

THE GARDEN IN THE HOUSE.

CULTURE OF PLANTS IN ROOMS.

(Continued from p. 54.)

PRUNING AND CUTTING-BACK.

In order to secure for plants grown in a room a symmetrical shape, it is necessary not only to place them near the light, but also to turn them from time to time, that the growth may not be all one-sided. With plants which have few or no branches, and are of slow growth, such as *Dracænas*, Palms, *Ficus*, *Yuccas*, &c., repeated turnings will be sufficient to produce a symmetrical shape. Bushy plants, the leaves of which fall off in consequence of too warm a position, or from want of light during the short dark days of winter, produce a quantity of rank shoots, some of which are long and others weak. These sometimes disfigure the shape of the specimen, and sometimes form no strong buds, so that at the commencement of the new growth in spring, they partially die off, and partially form a fresh feeble growth. In this case, in spring, before the new growth commences, the longest shoots must be cut back to a few buds, and all the small and weakly shoots should be removed entirely. But even when the growth is regular, pruning must be employed to secure a handsome shape, and all shoots which are too long must be cut back to a few buds. To what extent this is to be done will depend altogether on the shape which is to be given to the specimen. As a general rule it may be stated that, where long and strong shoots are required to complete the shape of the plant, the shoots should be cut back to two or three buds, and then only one or a few shoots allowed to develop themselves. The fewer the shoots which are allowed to grow on a branch the stronger they will be, while, on the contrary, the more there are, the feebler will their growth be; the same quantity of nutriment is in the one case conveyed to a greater number, and in the other case to a smaller number of shoots. Therefore, when a comparatively feeble or short growth is required, the shoots should be only slightly cut back. For the greater number of plants the best time for this operation is in the spring, before the new growth has commenced, and it may then be done at the same time when the plants are transplanted. There are some exceptions which are specially mentioned in the enumeration of plants for room-culture. When new shoots are formed on unsuitable parts of the plant, they should be broken off before they have grown too strong, as they will only obstruct the development of the other plants.

In addition to pruning for shape, it is that which has for its object the production of more abundant bloom. This is regulated by the peculiarities of the various kinds of plants, such as producing their flowers on ripened wood or on young shoots, their season of blooming, the parts of the plant on which the flowers appear, and various other matters which will be detailed at length in the enumeration of the plants. For summer-blooming plants this pruning is usually performed in spring, at the same time as the pruning for shape. The pruning of plants intended to bloom in autumn and winter will be fully noticed in the chapter on forcing. Some kinds of plants, and especially the continuously-blooming roses, should, after the first blooming in spring, be subjected to a second pruning in summer. This is done by cutting back the shoots which have flowered (usually to three buds), in consequence of which the plants make a second growth, and in the course of the summer flower again, and often better than the first time. The common monthly rose and the pretty dwarf *Rosa Lawrenceana* bloom almost uninterruptedly if the shoots are cut back constantly after blooming. The winter gilliflower also continues to produce fresh blooms for a long time if the shoots which have flowered are removed. The same is the case with many annuals.

Pinching the plants for the purpose of regulating the shape is a very different operation from pruning. This consists in pinching off the tops of the young shoots during the time of growth, in order to produce a thick bushy habit in the specimens. By preventing the development of the tops of the shoots, the buds in the axils of the leaves are forced into growth and form new shoots which may be treated in the same manner as soon as they have grown sufficiently long. The oftener this pinching

is repeated the greater number of shoots will be produced, and, in consequence, the plant will acquire a handsome full habit, a thing which every amateur knows how to value. Pinching is to be especially practised with plants of rapid growth, and with many shrubs from New Holland and the Cape of Good Hope, which, however, are seldom cultivated in rooms. Among the plants which are particularly benefited by it are Indian Azaleas, which, if carefully pinched when young, flower much more abundantly. The same may be said of Fuchsias, Heliotropes, Pelargoniums, Veronicas, Myrtles, &c. However advantageous this pinching may be in producing fine bushy specimens, it should not be continued longer than until the plants have acquired the desired form, as, so long as it is employed, the plants bloom but sparingly, or not at all.

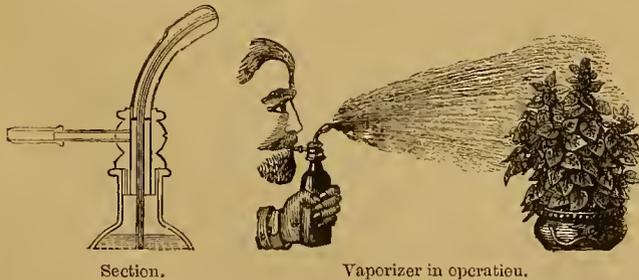
PROPAGATION BY MEANS OF SEED.—THE KEEPING OF SEED.

With regard to the duration of vitality in seeds, a great difference exists in different kinds, according to their organization. Some, even under careful keeping, soon lose their germinating powers, as the oak, the willow, and many seeds which are rich in volatile oil, as the nutmeg and most palms and conifers. These should be sown immediately when they are ripe, if it is expected they will germinate. Seeds which contain less oily matter preserve their vitality for a much longer time under otherwise favourable circumstances. Of this kind are the seeds of the various kinds of corn, the Cucurbitaceous and Leguminous plants. In the keeping of seeds so as to preserve their vitality, and, at the same time, not hasten their germination, the following conditions are necessary:—(1) A low temperature; for seeds of temperate and cold climates from 25° to 40° Fahr.; for those of warmer climates from 40° to 55° Fahr. (2) An atmosphere only very moderately moist. (3) Absence of sunlight, as under its influence the decomposition of the matter inside the seed is much hastened. (4) Free access of the air; therefore where seeds are kept in boxes or in heaps, they should be turned over from time to time. (5) Seeds that soon spoil should be kept in their seed-vessels until they are sown, or preserved in layers of dry earth or sand. (6) Avoidance of all influences which tend to excite germination, as a high temperature; or for seeds of tropical plants, the continuance of a very low one. (7) Seeds of water and bog plants, which naturally fall into water, should be kept in water.—*Dr. Regel.*

(To be continued.)

THE HORTICULTURAL VAPORIZER.

We have much pleasure in calling attention to this simple and efficient little contrivance. It is called by the inventors, Messrs. Parr & Atherton, of Nottingham, "the horticultural vaporizer." It is used for the application of Flettingham's Liquid Compound, or any liquid preparation used for the destruction of insect life. By means of it, liquids may be diffused over plants in a state of minute



division, or fine spray, in sufficient quantity to thoroughly moisten them, without wasting any of the liquid, the minuteness of the spray preventing a single particle of the liquid falling to the ground. The vaporizer may be used either by blowing, or by the use of a pair of bellows, fastened by means of a small piece of india-rubber tube to the mouth-piece of the vaporizer.

Table Decorations.—In a letter to the editor of the *Telegraph*, Mr. William Thompson says:—"In your report of the rose show at the Crystal Palace my name is mentioned as a defender of the practice

of 'cutting holes in the dinner-table' for the purpose of introducing plants without showing the pots in which they grow. Having so frequently acted as a judge of table-decorations during the last seven years, I hope you will allow me to state that I have neither proposed or approved of such a plan. What I do advocate is the use of properly-shaped plants as a part of the decorations of a dinner-table; and because the usual boxes, jars, covers, and other contrivances for hiding a flower-pot placed upon the table, so far as I have seen them, all fail to please my taste, I strongly support the plan advocated by Mr. Fleming, of Cliveden, of placing the pots under the table. This plan can be adopted without injury to any dining-table, either by allowing the plant to come up between the leaves of the table, which can readily be kept at the necessary distances apart by wood or iron straps fastened underneath, or by using extra leaves made specially for the purpose out of common wood. Four semi-circular glass or zinc troughs, arranged in two circles, one within the other, filled with moss, and tastefully decorated, form a base for the plant above the table-cloths, which is far more pleasing to my eye than any metal, earthenware, glass, or other art-product that I have yet met with. No stronger proof of the effectiveness of such arrangements need be instanced than the fact that, out of the ten prizes for table decorations which my brother judge concurred in awarding, five were given to tables which had young palms coming up through them. This, I repeat, can easily be done in any private house without cutting holes either in the table or in the table-cloths."

Liquid Manure for House Plants.—As liquid manure cannot always be had, especially in winter, dirty suds in which clothing has been washed will, I find, answer as well. I have used it all the winter, and my plants never grew so fast nor looked so well. I had this spring, a double Primrose in a three-inch pot, on which I could count over one hundred blossoms; also some bicolor and white Geraniums, started for spring planting, only three inches high, the leaves measuring four inches in diameter. My largest Calla stands three feet two inches high, leaves fifteen inches; also many other things, all of which I attribute to the use of my dirty suds once a week during winter. Last summer I watered all my roses with it, and the pillar Roses with dish water. The slugs scarcely troubled them, and the blossoms were really wonderful, both in quality and quantity. I never have any slops wasted. Bedroom slops are just the kind to throw around the roots of young trees; I think that is what saved our Mountain Ash last year from the borers; at any rate, it never does any harm to save all the slops for grape vines and hardy trees.—*S. J. H., in "Country Gentleman."*

GARDEN DESIGN.

HARTSFIELD, NEAR BETCHWORTH, SURREY.

HARTSFIELD, of which we this week furnish a plan, was, three years ago, merely fields cut off from one another by the ordinary hedges of the district, and containing here and there an occasional tree or two. By the removal, however, of old boundaries, and the working in of the existing trees, together with some new planting, a very charming little place has been formed. The mansion is placed on the summit of a knoll, commanding in every direction views of the most charming description; the beauty of the grounds is, therefore, to some extent lost, owing to the impossibility of representing on a flat plan the pretty undulations which they contain; a difference of nearly seventy feet exists between the lowest point on the carriage road and the site of the dwelling-house.

Advantage has been taken of a small tributary of the river Mole to form a piece of ornamental water, over a narrow neck of which the carriage road passes. Near this point is a pumping apparatus, worked by a water-wheel, which throws up a supply of water from a well to the house and offices, as well as to a fountain and several hydrants near the house.

The new planting that has been done consists of a mixture of the best evergreen and deciduous trees and shrubs, but we are sorry to see that the pretty terrace near the house has been disfigured by the introduction of incongruous trees, &c., which formed no part of the original design, and which destroy that free and open effect which it is so important should be maintained. Hartsfield is the residence of Captain and Mrs. Moir.

A LADY once consulted Dr. Johnson on the degree of turpitude to be attached to her son's robbing an orchard. "Madame," said Johnson, "it all depends upon the weight of the boy. I remember my school-fellow, Davie Garrick—who was always a little fellow—robbing a dozen of orchards with impunity; but the very first time I climbed up an apple-tree—for I was always a heavy boy—the bough broke with me, and it was called a judgment. I suppose that is why Justice is represented with a pair of scales."

SCALE 1/25000
1000
500
250



PLAN OF HARTSFIELD, NEAR BETCHWORTH, SURREY.

BIRMINGHAM HORTICULTURAL CONGRESS.

PROFESSOR DYER'S ADDRESS.

VARIATION.

How important it would be to thoroughly comprehend the principles of Variation. Yet of the numerous persons who raise new varieties of plants, there are few who record anything of their experiences. Some, no doubt, have acquired a kind of intuitive tact in working with plants. Still, anything like systematised knowledge in the matter is still to a great extent a want to be supplied. Mr. Darwin has groned together in a most admirable way the facts, in many cases very scanty, which he had been able to collect before writing his book. On many of these subjects it would be very desirable to obtain the fruits of more ample experience. A more extended study of bud variation is also a matter which I would commend to your notice. Mr. Darwin arrived at the conclusion that bud variations, when they occurred at all, usually assumed at once a decided and permanent character. At the same time he thought that this might possibly be a delusion from slight varieties being overlooked. The attention which is now paid to variegated pelargoniums seems to offer an opportunity of seeing whether this conclusion is really true. Again, from time to time various curious facts have been recorded with respect to the direct influence of the pollen, not on the seed alone, but also on the female parent. Mr. Anderson-Henry has stated that the flowers of a pale *Calceolaria* became stained after the application to the flowers of the pollen of a coloured kind. Maximowicz has described a change in the shape of the capsule of a lily in the direction of that belonging to the pollen parent. Again, the flavour of melons has, I believe, been stated to be deteriorated if the pollen of some other kind has got access to the flowers producing them. None of these cases are completely free from ambiguity, and the whole matter might easily be tested by those who occupy themselves much with artificial fertilisation. The instances would certainly be rare, but if they could be established free from all reasonable doubt it would be a matter of very great interest. The difficulty lies in the possibility of the supposed influence of the pollen being really due to a bud-variation. If, however, the same kind of variation were to follow in the same plant the application of foreign pollen more than once it would be almost certain that this was the cause. For example if it could be established that the flavour of a melon was perceptibly influenced by setting it with pollen of a different kind, the thing would be established beyond a doubt. We know that *a priori* it is not improbable, since analogous cases occur amongst animals.

PLANT NOMENCLATURE.

The nomenclature of plants is a subject upon which it is becoming more and more necessary to have some common understanding between botanists and horticulturists. At the last meeting of the Floral Committee a plant was submitted to it with the name of *Lilium bulbiferum Thunbergianum aureum nigro-maculatum*. As lilies are now favourite objects of culture, this name is quite likely to receive further distinctive additions. Now it seems to me that for trade purposes such a name must be almost a deterrent to purchasers. People grumble often at a plant having two Latin names; they will grumble still more at its possessing half-a-dozen. The remedy, I think, lies in adopting De Candolle's suggestion—that we should restrict Latin names to species and varieties occurring spontaneously in nature, and should give to forms which develop under our eyes in gardens names in a modern language. This expedient would tell us in a moment whether any particular plant was or was not of garden origin, and from the language the name would also inform us whether it was raised by English, French, or German horticulturists. Still, certain modifications of botanical nomenclature must, I think, be tolerated in horticulture. In the first place, reliance has often to be placed upon distinctions which, in a botanist's eyes, seem of little importance. It cannot be objected very much, therefore, if very well marked varieties or sub-species are treated as if they were species for purposes of garden nomenclature. If there is some tangible character by which they can be distinguished from their allies, it is easy to ascertain by reference to books the rank that botanists give them. If it is often necessary, as more is known about the plants which grow upon the earth's surface, to change generic and specific names. There is usually a good reason to be assigned for doing this, but it is undoubtedly a grave source of inconvenience. Botanists will not therefore blame horticulturists if they keep to many of the old names of which it is generally easy to determine the most recently recognised equivalent. *Odontoglossum crispum* is the original and lawful name of *O. Alexandræ*, but it is not now likely to supplant the name most in use. When plants have been placed, however, from the first in genera which are obviously wrong, I think an effort should be made to give them their proper position. Having made the concessions above mentioned, I feel that it is an absolute duty to protest against plants avowedly of garden origin,

having, under any circumstances, names given to them which are of the same form as those which are given to species spontaneously occurring in nature. The case of hybrids is an exception, but the name given to these ought always, I think, to be of such a kind that both the hybrid origin and the parentage is indicated by it.

METEOROLOGY.

There is one branch of science intimately connected with horticulture in which we are far from reaping at present the practical benefit of knowledge. This is meteorology. It is too much, I am afraid, to hope that we shall ever possess the slightest control over the asperities of weather, but it is scarcely too much to look forward to improved methods of foretelling what is in store for us, as well as improved methods of obviating its effects. The study of careful records of daily observations will, no doubt, eventually reveal not only some of the causes that influence weather itself, but will also throw light upon changes in public health with which it cannot be doubted that weather is closely bound up. Such records the Royal Horticultural Society kept at its Chiswick Garden for forty-four years, and the results of the observations have been lately printed by Mr. Glaisher at the Society's expense. The practical information which can be deduced from this volume is not, perhaps, considerable; it is, however, a contribution to the accumulated stock of records which will one day find their utilization. The mean temperatures at Chiswick, as deduced from the whole observations of forty-four years, starts from its lowest point of 35°.8 on January 6th, and rises more or less gradually to its highest, 64°.4, on July 17th. If climate would only pursue this even course with some approach to constancy, vegetation would follow it with clockwork regularity. We know, however, to our cost, that it does not do so, and very considerable deviations take place to one side or the other of the mean temperature. Both are injurious. A premature development of vegetation lays it open to subsequent injury, and comes to much the same thing, as regards its effects, as a late frost. What the horticulturist really has to fight, then, are the effects of cold. The precise mode in which plants are effected by it are hardly completely known. In many cases, no doubt, the vital properties of the protoplasm contained within the cells receive an injury from the direct effect of low temperature from which there is no recovery. In other instances death is not the inevitable result even from freezing; but, as is well known, if thawing be gradually effected, no great harm will be done. Some curious experiments published by Becquerel appear to show that cold below the freezing point, like the temperature of boiling water or the electric discharge, produces an alteration in the cell walls, which render them more pervious to fluids, and therefore no longer capable of retaining their cell contents.

PROTECTION AND RADIATION.

It appears to me that the pyramid fruit trees and espaliers, which are now so much grown, are peculiarly exposed to the effects of frost, as they are pruned so that each branch overhangs, and consequently protects any below it to the least possible extent. There ought, nevertheless, to be some cheap and effective way of protecting temporarily trees of this small size from frost. Any means of anticipating it would, in view of any expedients of this kind, be of the greatest value. It may be well, therefore, to mention that in spring a dry state of air, indicated by any very considerable difference in the readings of the dry and wet bulb thermometers, is likely to be followed by frost. The reason is simple; the night frosts, which injure vegetation, arise in the main from the loss of heat from the earth's surface by radiation. If there is much moisture present in the air this loss of heat is impeded. The luminous heat radiated from the sun passes through atmospheric moisture with little impediment, but the obscure or non-luminous form in which the earth radiates it back again is caught by it, as it were, in a trap. On May 17th, at Blackheath, near London, the air was nearly saturated with moisture, the degree of humidity being represented by 94° (as deduced from Glaisher's "Hygrometrical Tables;" Saturation 100°), and the lowest temperature of the air by 44°. Both temperature and humidity fell, *pari passu*, till May 20th, when the first stood at 32.6, and the other at 69. It would be of the more importance to have warnings of the probable occurrence of low temperature, because Mr. Glaisher has shown from the Chiswick observations that periods of deficiency of temperature below the mean are often prolonged to as much as a fortnight. In the forty-four years there were eighty such. I feel strong hopes that the telegraphic communication about the weather, which the Meteorological Office now collects from stations in the British Isles and Western Europe, will eventually lead to warnings of probable falls of temperature being obtained. The apparently paradoxical fact that the temperature often falls lower, and plants correspondingly suffer more, in low grounds than in those which are adjacent and higher, has often been observed, and is well worth

bearing in mind as a practical point in laying-out grounds. I am informed that the explanation is to be found in the downward gravitation of colder air, and its consequent collection in low-lying places and hollows.

BLUE LIGHT.

In every department of scientific work it from time to time happens that announcements are made which take completely by surprise those who know what has really been made out by legitimate investigation in the subjects they bear upon. Nevertheless, the outside world always takes them up with more or less of un-critical faith. A paper published during last year by General Pleasonton, "On the Influence of the Blue Colour of the Sky in Developing Animal and Vegetable Life," appears to me to have received a great deal more attention than its utter absence of any genuine scientific character deserves. Subsequently presented to the French Academy, it has been the subject of an article by Duchartre in the *Bull. de la Soc. Cent. d'Hort. de France*. This writer points out some of the mistaken scientific views held by General Pleasonton, but though apparently inclined to reject the whole narrative as a hoax, thinks that it is vouched for by testimony too respectable not to require some explanation. For my own part, having carefully read the original paper, I do not believe, for reasons I have elsewhere stated, that blue or violet light had anything to do with the extraordinary growth of the vines, supposing that really to have taken place as described. I am slow indeed to comprehend how such a physical condition as exposure to blue light can be equally beneficial to the growth of vines, the rearing of poultry, and the invigoration of the constitution of invalids. The erroneousness of the facts argued from the absence of all knowledge of modern publications in vegetable physiology, and the wildly crochety theories, such as electricity having produced the giant trees of California, disincline me, I must confess, to attach any serious weight to either General Pleasonton's views or his result.

GARDEN VEGETATION IN SOUTH DEVON.

We have just received from Mr. Luscombe, of Combe Royal, South Devon, a collection of fresh specimens of plants and fruits from his garden, which look as if they had been culled in some favourite nook in the tropics. They were, however, grown in the open air at Combe Royal, and instead of looking any the worse for it or for this inclement season, they are in several instances more robust than we have ever seen the same plants in glasshouses. This is particularly true of the fruit of some Citrons and Shaddocks, as well as of their foliage. These, together with the more remarkable specimens in the following list, may now be seen in our Office window. They well illustrate the great advantages of adapting our system of gardening to the peculiarities of local climate, and elicit the important fact that some spots in the south of England are as favourable for vegetation as Italy or California. It is almost needless to add that the Citrus tribe receives protection, but only that of reed or wooden frames, no artificial heat or glass being used. The screens are generally removed by day in the winter, and on or about the 1st of May, are taken away entirely until November. The summer shoots of the Shaddock and Citron are magnificent.

Among other things sent, are:—*Eucalyptus montana*, a large Tasmanian tree, only once slightly injured by an unusually severe frost; *Embothrium coccineum*, a small tree which flowers annually; *Philippodendron regium*, a tree from New Zealand; *Cantua dependens*, this is sometimes injured; in another garden, about a mile off, this once flowered magnificently, and was awarded a certificate of merit for the blossoms; *Olea illicifolia*; *Myrtus* (*Eugenia*) *apiculata*; *Abutilon vitifolium*; *Berberis Fortunei*; *Berberis nepaulensis*; *Ilex latifolia*; *Benthamia fragifera*; *Desfontainea spinosa*; *Arundinaria falcata*, nearly thirty feet high; *Aralia japonica*; *Dimorphanthus mandshuricus*; *Acacia dealbata*, the parent plant, destroyed by the weight of snow about twelve years ago, was about fifty feet high; *Camellias*; *Gunnera scabra*, leaf and fruit, the former is a small specimen, as the first leaves were destroyed by an April frost; *Bambusa Metake* (Japan); leaf and flower stems of *Chusan Palm*; *Rhododendron Fortunei* (China); *R. Thomsoni*, a splendid Sikkim species, which flowers annually; *R. blandfordiæ* *florum*, a wonderful yellow and orange Sikkim species, very free-flowering; *R. arboreum*, the true species, raised from Indian seeds by the late Mr. James Veitch; many plants were destroyed by frost two or three years since, two stems being quite three feet in circumference; *R. cinnamomeum* (India); *R. nobile* (Ceylon); *Azalea indica Fortunei*; *Seville oranges* from a tree known to be nearly, if not quite, two hundred and fifty years old; summer shoots of Citron; summer shoots of Shaddock; Lime (Citrus) and shoots; fruit of Lemon, *Seville orange*, Citron, and Shaddock; *Amaryllis* blooms and leaves, raised from seed, and bloomed in the open air unprotected, in a garden a mile distant from Combe Royal.

NOTES OF THE WEEK.

— THE potato disease is said to be making its appearance not only in the west of England, but in other parts of the country.

— IN Portugal the weather is reported to be excessively hot, and we hear that the vine disease is spreading.

— WE are glad to report that, notwithstanding the peculiar severity of the early summer, the distinct and graceful *Amarantus salicifolius* is thriving well in the gardens round London.

— IN the pretty town of Brookline, State of Massachusetts, a gentleman has been arrested and fined for nailing up a vine on his house on Sunday. There is quite a row in hitherto peaceful Brookline, in consequence.

— *DIANTHUS RAMOSUS*, a pretty and distinct species of pink, is now in flower at the Royal Gardens, Kew. It forms a dense, much-branched tuft, about eight inches high, and produces an abundance of purplish rose-coloured flowers.

— A REMARKABLY beautiful *Nierembergia* (*grandiflora*) is now in flower in Messrs. Veitch's nursery at Chelsea. In habit it resembles *N. frutescens*, but has much larger flowers; and as these are produced in great abundance, the effect is all that could be desired.

— THE great injury done to vegetation during the recent eruption of Mount Vesuvius has been attributed not so much to the heat of the ashes scorching it, or to the dust closing the pores of the leaves, as to the destructive action of the large quantity of chloride of sodium (common salt) which fell with the ashes.

— MR. J. A. FULTON, of Delaware, writing to an American paper, says that there are now in that State about 5,000,000 peach trees, planted on 40,000 acres of land. Last year the shipments by rail and water amounted to about 3,000,000 baskets. The annual net value of the products of the present orchards in future is placed at 1,830,000 dollars. No increase of production is recommended.

— THE strike among the London market-garden labourers still continues. The old market-garden hands have found employment at haymaking, harvesting, and similar work; and their places are filled by strange hands and also by boys, who, under the superintendence of foremen, do the fruit-picking and the roughest of the weeding.

— MANY of our readers would probably be interested in seeing the extraordinary specimens of shaddocks, citrons, oranges, &c., grown at Combe Royal, in Devon, and now exposed to view in the window of THE GARDEN Office. We have never witnessed such vigour of shoot and foliage on plants grown in the open air in countries much warmer than ours.

— A PARTY of invalids, in number about seventy, residing at the Royal Hospital for Incurables, Patney Heath, were entertained a day or two since at a garden party in the beautiful grounds at Rotherhampton belonging to Baron and Baroness Hambro. The baroness and several willing ladies did everything in their power to promote the comfort of their invalid friends. The conveyance of them from and to the hospital was admirably managed.

— A VERY good suggestion was made the other evening with regard to the Serpentine. Sir John Troloway proposed that bathing places of an ornamental character should be erected in the centre of the lake. From the banks they would present the appearance of islands, while they might be of such a size as to secure a large space inside for swimming. A great opportunity for diversifying and otherwise beautifying the Serpentine was lost when it was cleaned out a short time ago. The banks were left even uglier and more formal than they were before.

— THE latest particulars received regarding the thunderstorm on Tuesday night show that it was unusually severe and destructive. All the market-gardeners and fruit-growers who attended Farringdon Market on Wednesday morning, gave a deplorable account of the damage done to their property. In many cases acres of ground, covered with strawberry plants and raspberry canes, were, at the time the owners left, at least eighteen inches under water; and the ripe fruit, which would have been gathered during the next six hours, has of course been spoiled, and numerous female pickers have in consequence been thrown out of their usual summer employment. The crops of French beans and scarlets have been buried in the soft ground by the force of the rain; and trees have been stripped of plums, cherries, and other stone fruit, by the strength of the lightning and heavy downfall of rain. A man named Ellison, in the employ of a market gardener and potato merchant in Covent Garden Market, while passing along James Street, Long Acre, was struck by the lightning across his face and was instantly deprived of sight. At Edmonton and Enfield, all pedestrian traffic was stopped owing to the vast accumulation of water, which covered whole fields of ripe corn, and also laid down and spoiled large tracts of vegetable and fruit ground.

— WE hear that a Bill has been presented to the National Assembly by M. Joigneaux, the purport of which is to convert the kitchen gardens of Versailles into a practical school of horticulture, and this project has every chance of success.

— THERE is now to be seen in the conservatory of the Royal Horticultural Society, at South Kensington, a pair of American aloes in bloom, and probably such a match as is seldom seen. They are in every way alike, and have thrown up their noble candelabra-like flower stems to a great height.

— A PLANT bearing the name of *Scabiosa parnassiae* is now in bloom in the herbaceous ground at Kew. It forms a neat spreading tuft not more than four inches high, and produces pretty flesh-coloured flowers, which are about an inch and a half in diameter, in great abundance. This is the best species of the genus we have seen, and will doubtless soon find a place in all good collections.

— THE head constable of Liverpool desires to remind gentlemen living in the suburbs of that town, that about this time last year several robberies of grapes took place. He hopes, therefore, that gentlemen having vineyards will see the necessity of taking more than ordinary precautions to prevent, as far as possible, a repetition of those occurrences.

— THE fine weeping willows in the gardens of the Holme, Regent's Park, are perishing from the attacks of carpenter caterpillars which bore through them in all directions, soon killing the trees. Their attacks are so vigorous, that there is quite a heap of sawdust at the base of each specimen. We hope soon to illustrate these creatures and their ravages in our department of THE GARDEN devoted to "Garden Destroyers."

— A CORRESPONDENT informs us that he saw the other day in the Botanic Gardens, Belfast, a magnificent specimen of *Orchis foliosa*, a terrestrial Madeira species, well deserving of more attention than it usually receives. It quite filled an eighteen-inch pan, from which it threw up between thirty and forty fine spikes of charming rosy purple flowers. It grows about a foot and a half high, and is a plant which, when in bloom, is sure to elicit general admiration.

— NOTWITHSTANDING the very fickle season which we have experienced, many of the sub-tropical plants at Battersea Park are making good growth, and the sub-tropical garden generally is looking well. Lovers of gardening visiting London, and having a few hours to spare, cannot spend them better than in paying a visit to this park, where they will find much to interest them, both in the sub-tropical garden, and in the bedding arrangements generally.

— THE handsome and neatly-habited *Ononis fruticosa* is now in flower. It is seldom seen about London, though no doubt it was often planted in days gone by; but being a dwarf mountain shrub, it probably often perished from being associated with coarse subjects in plantations. It is suitable for grouping with the dwarf American plants, for banks, for rockeries, or for planting alone on turf.

— THE most beautiful objects in the suburban gardens of London now are the round-headed Acacias (*Robinia pseud-acacia inermis*). Their deep fresh verdure is delightful to look upon in the heat of summer; but, unhappily, those who have the good taste to plant them are few. The early-withering lime is planted in nearly every garden, and annually mutilated in the vain hope of compelling it to assume the compact proportions which this Acacia assumes of its own nature.

— THE white *Lapageria* is now a beautiful ornament in the conservatory at the Holme, Regent's Park. It is trained first on a trellis against the wall, and then across the house on a strong cord, about four feet from the roof and ten feet from the ground, the shoots being allowed to hang gracefully down. On the opposite side is a plant of the old, or crimson kind, which meets and mingles with the shoots of the white one. The effect of the mixture of the variously-coloured flowers is, as may readily be supposed, very charming. Their beauty is not fully seen when the plants are trained stiffly against walls or trellises. The shoots should be allowed to hang freely down.

Stung to Death by a Bee.—An inquest was held the other day at Twickenham on the body of Miss Elizabeth Hough, an aged maiden lady. It appears that on Friday morning, the 19th instant, the deceased was in her garden, inspecting the beehives, when she suddenly called out, "Oh, gardener, I've been stung; come and help me!" The gardener found only one bee in her hair, which he removed. Deceased soon afterwards became unconscious, and a medical man was sent for; but when he arrived the lady had been dead a quarter of an hour. He made a *post-mortem* examination of the body, and found a great deal of discoloration behind the ear, caused by the sting of a bee. Major Lewis Hough said the deceased,

who was his sister, was of a delicate and nervous constitution. In the autumn of 1870 she was stung by a bee, and on that occasion it produced very peculiar consequences. She lost consciousness, and remained in that state for two hours. The coroner remarked that some persons were peculiarly susceptible, and in such cases, when syncope set in, the best remedy was a little brandy or ammonia.

Alexandra Park.—At a public meeting held at the Mansion House the other evening, under the presidency of the Lord Mayor, the following resolution in reference to this park was proposed:—"That this meeting having had placed before it a prospectus for the utilization of Alexandra Park and Palace in the true interests, moral as well as physical, of the people, pledges itself to every legitimate effort to secure and complete the success of the enterprise." Lord Lyttelton seconded the motion, and expressed his hearty approval of the great object which the meeting was assembled to promote, namely, to establish a Crystal Palace for the North of London. The resolution was unanimously carried, as was also another to the effect that the plan suggested in the prospectus, of enabling the people to become themselves the purchasers of the park and the palace, deserved the greatest encouragement.

Proposal to Open a London Square to the Public.—The experiment of an open garden for the public, says the *Pall Mall Gazette*, is about to be tried by Lord Westminster, who proposes to lay out and plant the space now enclosed in Ebury Square, and to remove the railings. If the arrangement proves a success other squares will, no doubt, in due time, be also thrown open, and a new feature of a pleasant description be introduced into the aspect of London. Ebury Square is in all respects a fit subject for an experiment of this nature. It has for some time shown a tendency to follow the downward path of Leicester Square, and has been allowed to fall into such a state as to become an eyesore to the neighbourhood. There are also numbers of poor children in the district to whom an unenclosed square will be an inestimable blessing. Ebury Square was originally lammas land. It formed part of Eybery Farm, leased by Queen Elizabeth to a certain Mr. Whaske for £20 per annum, who, according to Strype, sublet it to "divers persons, who, for their private commodity, did enclose the same, and had made pastures of arable land, thereby not only annoying her Majesty in her walks and passages, but to the hindrance of her game, and great injury to the common, which at Lammas was wont to be laid open." Ebury Square is therefore not without some experience of the "many-headed" public, and will perhaps not be sorry to renew its acquaintance with its old friends. It is, however, to be hoped that the square will not be appropriated by agitators for political purposes. Whatever may be the flowers selected to adorn Ebury Square, the flowers of eloquence should be rigidly excluded, and under no circumstances should the "discussion of grievances" form part of the programme of its amusement.

GARDENING ROUND LONDON.

(DURING THE PRESENT WEEK.)

BY OUR SPECIAL REPORTER.
PRIVATE GARDENS.

Indoor Plant Department.—Now, when large plants put out in beds and borders are making free growth, and require a good deal of water, basins are formed round their base by removing the soil to the depth of three inches or so, and of a diameter corresponding with the size of the plant. These basins are loosened in the bottom with a steel fork, taking care not to disturb any roots that may be near the surface. This loosening of the soil enables the water to penetrate to the bottom of the beds. Zonal Pelargoniums for conservatory decoration are being repotted, and occasionally well watered with manure-water, the flowers, too, are all picked off as they appear, and the plants are shaded for a time, and are allowed plenty of air. Cockscombs, to succeed those already in bloom, are shifted into their flowering pots, and any likely to become "leggy" are cut over and re-inserted in the pot, using a little sand to induce the formation of roots. Fuchsias are pinched in, and well syringed and watered, until a short time prior to their being required for use. Japan Lilies done blooming are placed out of doors in sheltered positions, and are gradually dried off, after which they are laid on their sides, to protect them from the heavy rains. Heaths in pots are set out of doors, also many other hard-wooded plants and succulents. Chinese Primulas are introduced into gentle heat in order to invigorate them a little before cutting off all their shoots, which will then be treated as cuttings to form plants for next season's blooming. Calceolarias for next year's work are being pricked off into boxes, using as soil good yellow loam, a little leaf mould, some well-decayed manure, and a little silver sand, all finely sifted for the surface of the box,

the rougher material being placed in the bottom. A late sowing is also being made. In sowing, the seeds are scattered equally and rather thinly on the surface of a pan of light soil, and barely covered. The pan is then placed in an almost spent hot-bed, usually one used for spring propagating, and on the surface of the pan a pane of glass is placed, which is covered with some damp moss, or instead of placing the moss on the glass, some litter, or other similar shading material, is placed on the glass of the frame. No sun is allowed to reach them before they germinate, for it is necessary to prevent the soil from becoming dry, and, even after the young plants do come up, the shading is retained on the frames. A little air is always kept on, except for a night or two after they have been potted or pricked off. Begonias intended for winter blooming are being cut back, with the exception of such kinds as *manicata*, *Roi Leopold*, &c.; *B. nitida* is one of the best among flowering kinds, but it never produces such fine blooms when confined in a small pot, and kept cut down, as it does when allowed to ramble at freedom in a stove or Orchid-house. If the roots find access to a bed of good soil, mixed with chips of sandstone, brickbats, &c., and the stem is trained up to the roof, it produces magnificent trusses of bloom.

Flower Garden and Shrubbery.—In shrubberies, unsightly branches and those intruding on walks, are removed. Conifers, in some cases, are also being shortened in a little. Rose-budding is being proceeded with; from the stocks the roughest of the shoots are removed, but those to be operated on are preserved untouched, unless they are long and much branched. Pelargonium cuttings are now being taken off, and inserted in wall borders; but Verbenas are commonly struck in frames. Dahlias, as they advance, are fastened to stakes, taking care not to tie them up too closely or stiffly. Holly-hocks have their tops pinched off when they get about six feet high, and are encouraged to produce good flowers by applications of manure water. Tufts of Pampas Grass thorough waterings are given, as even heavy rains sometimes fail to reach the roots.

Indoor Fruit Department.—Pines are now producing, as a rule, suckers freely; but where they refuse to do so, as soon as the fruit is removed, they receive plenty of water, additional heat, and atmospheric moisture—conditions which soon cause them to produce good and strong suckers. Young pot Vines are now allowed a little more air and a drier atmosphere, but no decrease of water at the root is yet permitted, as the aim is to preserve the foliage in as good and healthy a state as possible. Melon beds, in which the plants have borne fruit, are being partly renewed, the sashes and glass washed, and young healthy Melons planted, the growth of which is encouraged by a good bottom heat, and a high moist temperature. From Cucumbers in frames all decaying leaves are removed, also male flowers and superfluous wood. Gano and other kinds of manure water are freely administered to old plants. In orchard-houses, where the fruit is ripening, a steady warm temperature is maintained; and, in order to impart increased flavour, a little air is kept on night and day. Pot plants, having yielded their crop, are placed outside, so as to get their wood better ripened.

Hardy Fruit Garden.—The shoots of fruit trees on walls continue to be thinned and laid in. Peach and Nectarine trees have the fruit-bearing wood shortened in a few inches. Laterals are removed, but not quite close to the main shoot. Newly planted trees require little pruning, it being considered better practice to remove the shoots in a young state with the finger and thumb. Stone fruits are being budded, some of them, on stocks, cut as low as the surface of the ground, and others considerably higher. The syringe is used freely amongst wall trees, and choice young standard Pears, to remove insects. Moss, if any, on valuable fruit trees or bushes, is scrubbed off with a rough brush, and the parts on which it has been growing are washed with brine, not too strong.

Kitchen Garden.—As Potato ground becomes empty it is filled with Broccoli, Scotch Kale, or other greens. For Broccoli a western aspect is preferred; but Scotch Kale and Brussels Sprouts, it need scarcely be stated, will succeed in the most exposed situations. In cases in which stubby Cabbage stumps have been left they are producing a second crop. To encourage this the soil is dressed with well-decayed manure, and loosened with a steel fork; only two, or at most three, offsets are allowed to spring from each crown. A small sowing of some dwarf early kind is made, so that a few nice little heads may be produced to succeed the Coleworts. All Potato Onions are being lifted and dried; spring-sown ones are making good progress. A few radishes are still sown in cool places, and a few more Lettuces are planted out. Some Onions are also sown for salading; some out of doors, and some in frames, where they can be protected from heavy rains. Scarlet Runners are pinched to induce them to throw out laterals, and thus continue in bearing; the removal of all pods just as they are fit for use, whether required or not, considerably prolongs the bearing season. Tall Peas

are being pinched, and where time can be spared, a good soaking of manure water now and then is given them.

NURSERIES.

Indoor Department.—Camellias that have made good growth have their young shoots hardened by gradually exposing them to more air. Young Azaleas are being stopped for the last time; some of them are being tied down very near to the surface of the pots, so as to induce a stubby habit. Young plants of Clerodendrons, of the *Balfourianum* or *villosum* section, are being potted on, using for the purpose a good rich compost. Cuttings of climbing Ficuses, such as *F. barbata* and *repens*, besides being planted in sandy soil in frames in the propagating pit to root, are cut into pieces from six to eight inches long, and potted at once into a compost of two parts of peat and one of sand. *Philodendron Lindenii* is cut up into pieces about a foot or more in length, and potted into a compost of rough peat, crocks, and sphagnum, finishing with a layer on the top of pure sphagnum. The shoots are then pegged down to the surface, and after a short time, by the assistance of a little heat and the moist moss, they emit roots from every joint. Gloxinias are being increased by means of well-ripened, sound leaves placed in pots of sandy peat surfaced with silver sand. The pots are then plunged in a gentle bottom heat under a bell-glass or hand-light in the propagating pit. Young Palms are being potted off from seed-pans into sixty-sized pots, using a compost of rotten dung, loam, peat, and sand. *Cissus discolor* and *amazonica* are being increased by means of cuttings consisting of two joints, one being under the soil and one just above the surface. Well-ripened wood is required for this purpose, otherwise they will be sure to damp off. Some kinds of succulents are being repotted in a compost consisting of good yellow loam, well-decayed manure, some broken crocks, and a little sand. Some of the finer kinds of Selaginellas are being increased by means of good healthy pieces having roots attached to them being taken off and potted into small pots, the soil used being peat, leaf-mould, broken crocks, and silver sand. Ferns from spores have the surface soil of the pots or pans in which they are grown cut into small pieces, which are carefully lifted out and placed on the surface of freshly filled pots. A few of the younger Ferns are being repotted, using for the purpose sandy peat and a little sand; sometimes a little loam or leaf-mould is added. Young plants of *Platyserium aleicorne* are also being potted; for these the compost is of a rougher character than that for most other ferns, being rough turfy peat, loam, broken crocks, and sphagnum. Some Orchids are being top-dressed, an operation which should, however, have been performed much earlier in the season.

Outdoor Department.—Cultivators are at present engaged in lifting ripe bulbs, such as those of Crocuses, Narcissi, Ixias, Sparaxis, Ornithogalums, &c. Pansies are being lifted and divided into as many parts as there are shoots springing from the base. They are set out in beds about four feet wide, the lines being six inches apart, and the cuttings an inch or so asunder. Temporary frames or hoops are placed over them covered with mats, which are removed as soon as they begin to root. More care is taken with the finer kinds of Pansies, but some that have just been treated the same way as the bedding ones are looking quite as well. Carnations are being prepared for layering by removing all lateral shoots and flower-spikes. Some herbaceous and alpine plants are top-dressed; those making vigorous growth are shifted at once into larger pots, in order that they may fill them with roots before the days turn cold; others are being shifted from thumb pots to sixty-sized ones. If the plants are valuable, a little bottom heat is also applied. In potting, the rarer kinds are divided into as many pieces as will make nice little plants, and they are potted individually into thumb pots. For most of the kinds, a suitable compost is two-parts good loam, one of leaf mould, and a good admixture of sharp sand. Young shoots of sweet Rockets, and other herbaceous plants that have been pegged down throughout the summer, are also used as cuttings. Rose-budding is being proceeded with. Points of Conifer shoots, bearing signs of the presence of the pine-beetle, are removed and burned; care, however, is taken to cut these shoots off as far as the beetle has bored, otherwise the amputation will have been made in vain. The wood of young fruit trees is being thinned and trained into form.

MARKET GARDENS.

In dry weather, Celery, Vegetable Marrows, and other crops are liberally supplied with water. In districts where the supply of water is deficient, French Beans, Cauliflower, Broccoli, Lettuces, &c., are grown as summer crops, in preference to Vegetable Marrows and Celery, which require too much water to repay the trouble of supplying it. Cucumbers are allowed to occupy frames in summer; the frames will, however, be cleared of them by-and-bye, the beds will be renewed, and Cauliflowers and Lettuces will be sown therein for the earliest planting next spring. At present a few

Lettuces are being planted in open spaces formed by the removal of the present crops. Celery ridges for the main late crops are formed, some with four feet spaces between them, and others with eight feet spaces; the narrow beds are planted with two lines of Coleworts or Cos Lettuces, and the broad ones with four lines of Endive. Fruit gathering forms the greatest part of the current work; as soon as gathered, it is placed in little round vegetable baskets, covered over with a few Rhubarb or other leaves, made pliable by having been cut a day or two previously, and fastened down by crossing pieces of stout willows. Potatoes are brought to market in the same way; some separate the larger from the smaller ones, either with the hand, or through large-sized wire sieves. Tomatoes sufficiently advanced, and whose fruit is fast swelling, have the points of the main shoots cut off, so as to throw additional vigour into the fruit; laterals are carefully removed from all advancing crops showing flower, retaining only such as are producing good clusters, at the same time avoiding too much wood. They are well watered at the root, and a little manure water is found to be very beneficial. Asparagus is allowed to grow freely, removing only the small sprays about the base; the beds are kept clean by hand-weeding, which, in many cases is performed by boys. These youths are employed for this and similar purposes in place of the regular hands that are out on strike. Seeding crops now receive great attention in the way of tying up the plants, watering, &c., most of them, such as Onions, Leeks, Lettuces, Cauliflowers, &c., being in full bloom, and beginning to form their seed. Cabbage seeding plants are being cut over as the seed becomes ripe; stalks, seed-pods, and all, are laid out on canvas to dry, or hung up in bundles in dry sheds. Pot herbs are being cut over when ready, and tied into little bundles for drying for winter use. A young stock, however, is always preserved by late sowings, and second growths, from early cut plants.

HINTS FOR AMATEURS.

Flower Garden.—See that Roses are clean, and kept in a healthy growing condition. To insure good autumnal bloom, cut back the shoots to three or four eyes as soon as the first blooms are over, and soak the roots with manure-water. Finish budding Roses by simply making a slit as near the base of the shoot as possible, insert the bud, and tie with cotton, or woollen thread is best for this purpose; very little tying is needed when the cross cut is dispensed with, as it ought to be. Help weak or late plants, such as Dahlias, Hollyhocks, &c., with manure water to fill their allotted spaces.

Fruit Garden.—Let Vines have plenty of air, night and day, as soon as the fruit begins to colour. In the case of Peach and Orchard houses, a moderate crop, perfect health, spotlessly clean houses, and airy open treatment, lay on colour and flavour. Keep Melons ripening rather dry, and cut the fruit as soon as any flavour is perceptible, or it begins to crack around the stalk, otherwise it is apt to split, and its appearance becomes ruined. Cut all fruit on Cucumbers that are fit thrice a week; stop every shoot, and remove any superannuated leaves, at least once a week. In the case of hardy fruits, mass the small ones together, so that they may be netted over to keep them from birds. For instance, plant the walls with Cherries, Gooseberries, Currants, and Raspberries, and plant the ground between with bush fruit, such as Gooseberries and Strawberries, then net from wall to wall. The nets will last much longer thus highly elevated above the ground, and the fruit-gatherer can go in at any point and gather the fruit in comfort; the birds also give up trying to reach the fruit through the nets, and thus one great source of wear and tear of nets is avoided. There is considerable art in the gathering of fruit. It should not be handled at all, or as little as possible, and no crushing or overcrowding should be indulged in. Very much of the difference between good and bad fruit at dessert results from the gathering. Vine leaves, or those of the Plane and the Sycamore, are the best for laying fruit upon. Cabbage or Cauliflower leaves are about the worst. In wet weather especially, these taint such fruits as Raspberries and Strawberries with a Cabbage flavour. Such fruits, again, as Gooseberries, Currants, and Cherries should be gathered in clean baskets, without leaves. If laid thin, their skins will protect them from injury, as they will appear in better condition than if they had been previously bedded on Cabbage or any other fine or succulent foliage. As to the time of gathering fruits the early morning is the best. Better and pleasanter far to gather dessert then, and store in the pantry or cellars till our early or late dinner, than rush out in the mid-day or afternoon sun to gather fresh fruit for dessert; that gathered in the early morning will eat by far the fresher and sweeter of the two.

Greenhouses, &c.—Shade late Pelargoniums and Fuchsias from the sun, and thus prolong their bloom. Allow climbers to grow and flower freely, and to assume for a time a free habit.

Better an empty house at this season, than one filled with faded, worn-out flowers.

Kitchen Garden.—The secret of a well-furnished garden is incessant attention to trifles. The main crops are pretty sure to be got in all right and in time, but it is the successional sowings and plantings that keep the garden full. Make some last sowings of Peas—a good marrow and a good early sort—such as First Crop; sow also Walcheren Broccoli, Lettuces, Endive, Cabbages, Horn Carrots, Turnips, and Radishes. Plant out Broccolies, Greens, Savoy, Cauliflower, Lettuces, Cabbages, and Celery, on all vacant ground. Water growing crops in dry weather, destroy weeds, and scarify all ground between such crops.

D. T. FISH.

OBITUARY.

WE have to record the death of Mr. Ramsay, late fruit-tree foreman to Messrs. James Veitch & Sons, at the age of seventy-one. For the last few years Mr. Ramsay had resided at Leicester, where he died only a week after being elected a pensioner of the Gardeners' Royal Benevolent Institution.

COVENT GARDEN MARKET.—July 26th.

Flowers consist of Cockscobs, in four and six inch pots; Balsams, in six-inch pots; Japan Lilies, finely bloomed, in four and six inch pots, including *L. speciosum*, roseum, a few of punctatum, and some nice plants of *L. auratum*. The hardier kinds of Lilies, such as *L. longiflorum*, *tigrinum*, &c., are also brought in in the form of cut flowers. Fuchsias are very abundant, and although they consist chiefly of the free-blooming old kinds, yet amongst them may be found several of the newer sorts, both single and double. Hydrangeas, both pink and blue, from spring-struck cuttings may be obtained. Sensitive plants (*Mimosa pudica*), for such as have small warm conservatories, may also be had; likewise nice plants of Achimenes and Gloxinias, both of which are great favourites. China Roses are still furnished in pots, although many handsome-leaved plants, such as Begonias, Marantas, Dracenas, Caladiums, little Palms, Ferns, and Mosses. Cut flowers principally consist of Rose blooms; Carnations, more particularly dark clove-scented ones; wild grasses, which, mingled with ordinary flowers, add considerably to their gracefulness; and blooms of the double-white Feverfew, the rose-coloured Achillea, Lupin blooms of different colours, and flowers of many hardy annuals and perennials. Strikingly beautiful are blossoms of the blue Corn-flower. Dahlia blooms are also now coming in; and likewise those of the white Water Lily (*Nymphaea alba*) which are sold at a penny a piece.

PRICES OF FRUIT.

	s. d.	s. d.		s. d.	s. d.
Apples .....half sieve	2 0	to 3 0	Melons .....each	3 0	to 8 0
Apricots.....per doz.	2 0	4 0	Nectarines .....per doz.	4 0	15 0
Cherries .....per lb.	1 0	2 0	Oranges .....100	8 0	15 0
Chestnuts.....bushel	0 0	0 0	Peaches.....per doz.	12 0	24 0
Figs .....per doz.	4 0	10 0	Pine Apples .....lb.	3 0	8 0
Filberts .....lb.	0 0	0 0	Plums.....per box	3 0	4 0
Cobs .....lb.	0 0	0 0	Strawberries.....lb.	0 6	2 0
Grapes, hothouse ..lb.	3 0	6 0	Walnuts .....bushel	10 0	25 0
Lemons .....100	7 0	10 0	ditto .....per 100	1 0	2 0

PRICES OF VEGETABLES.

Artichokes .....per doz.	4 0	to 6 0	Mustard & Cress, punnet	0 2	to 0 0
Asparagus.....per 100	0 0	0 0	Nasturtium seed for		
Beans, Broad per bush.	3 0	4 0	pickling..... per pint	0 4	0 4
Beans, Kidney ...sieve	3 0	3 6	Onions..... per bunch	0 4	0 6
Beet, Red.....doz.	1 0	3 0	Onions.....bushel	3 0	6 0
Broccoli .....bundle	0 9	1 6	pickling.....quart	0 6	0 9
Cabbage .....doz.	1 0	2 0	Parsley, ...doz. bunches	3 0	4 0
Carrots .....bunch	0 6	0 9	Parsnips .....doz.	0 9	1 0
Cauliflower .....doz.	2 0	6 0	Peas.....per quart	0 9	1 6
Celery .....bundle	1 6	2 0	Potatoes, Kidney...cwt.	7 0	10 0
Chilies .....per 100	1 6	2 0	Potatoes, Round...do.	6 0	12 0
Coleworts doz. bunches	2 6	4 0	Radishes doz. bunches	0 6	1 0
Cucumbers.....each	0 6	1 0	pods for pickling pint	0 4	0 0
Endive .....doz.	2 0	0 0	Rhubarb.....bundo	0 6	1 0
Fennel .....bunch	0 3	0 0	Salsafy .....doz.	1 0	1 6
Garlic .....lb.	0 8	0 0	Scorzoneria.....bunde	0 9	1 3
Herbs .....bunch	0 3	0 0	Shallots .....lb.	0 4	0 6
Horseradish .....bundle	3 0	4 0	Spinach .....bushel	0 0	2 6
Leeks .....bunch	0 2	0 4	Tomatoes.....doz.	2 0	4 0
Lettuces .....score	0 6	1 6	Turnips .....bunch	0 4	0 9
Mushrooms .....pottle	2 0	3 0	Vegetable Marrows doz	2 0	3 0

St. Swithin's Day.—The result of observations taken at Greenwich for the twenty years preceding 1861 proves that no confidence whatever is to be placed in St. Swithin's Day. Indeed, the more it rains on the 15th of July the greater the probability of fine weather. In 1841, when St. Swithin's Day was wet, there were 23 rainy days between the 15th of July and the 24th of August; in 1845, 26 rainy days; in 1851, 13 rainy days; in 1853, 18 rainy days; in 1854, 16 rainy days; and in 1856, 14 rainy days. On the other hand, when St. Swithin's Day was fine, as in the following years, the results were painful in the extreme. In 1842, 12 rainy days; in 1843, 23 rainy days; in 1844, 20 rainy days; in 1846, 21 rainy days; in 1847, 17 rainy days; in 1848, 31 rainy days; in 1849, 20 rainy days; in 1850, 17 rainy days; in 1852, 19 rainy days; in 1855, 18 rainy days; in 1857, 14 rainy days; in 1858, 14 rainy days; in 1859, 13 rainy days; and in 1860, 29 rainy days. St. Swithin, therefore, is no more to be depended on for a constant supply of water than the Metropolitan Water Companies.—*Pall Mall Gazette*.

THE GARDEN.

“This is an art

Which does mend nature: change it rather: but
THE ART ITSELF IS NATURE.”—*Shakespeare.*

THE ROSE-AMATEUR'S GUIDE.*

WITH varied feelings, kindly and pleasant all of them, we welcome another issue of this well-known and well-loved manual. First, with happy and grateful memories of the time when, nigh upon thirty years ago, we first fell in love with the Rose (and with everything else that was beautiful), and were introduced by Mr. Rivers to the Garden Queen. Ah, what sweet summers of happiness this little book—so freshly, so truthfully written from the fulness of an earnest heart—brings home to memory! How many hundreds have sat with it, beneath umbrageous branches or in some cool grot, and have learned from its genial tone and lucid teaching to appreciate more highly, and to realize more fully, the beauties of the royal rose! It has brought new brightness to many a bright English home, to castle and hall, to parsonage and cottage too, not only for the eyes, but for the hearts of those who first learned from its pages that “gardening is the purest of human pleasures,” and that the chief grace of a garden is the rose.

And then we think of “that grand old gardener,” the author, and how much thankfulness is due to him from us all, not only for what he has written, but for what he has done for the garden—not only for this “guide” to the culture of roses, and for other guides equally reliable, which he has published on the culture of fruit, but for yet more valuable *works*, as, for example, the introduction of the Manetti stock for roses, which has multiplied the enjoyment of their loveliness a thousandfold, and also the invention of orchard houses, and consequently of the profitable and enjoyable cultivation under glass of fruits, which were previously grown (and very frequently destroyed) *al fresco*.

It would, of course, be most undignified in a State or Government to recognise any merit in such a man as this; but we gardeners, nevertheless, take leave to think that Thomas Rivers has done more for the happiness of his countrymen than a great number of personages, whose names are inclosed, like sandwiches, with titles to left of them and letters to right of them; we almost dare to believe that this little red book has diffused as much pleasure and profit also as some of those huge volumes which are bound in blue; and we are quite sure that it will be remembered and read, when the scientific dissertations of haughty theorists, who never huddled a rose nor pruned a fruit tree, shall have passed, easily and greasily, from the butterman's hands into oblivion.

KEW GARDENS.

DR. HOOKER AND MR. AYRTON.

THE debate in the House of Lords the other night on this question proved a failure. Whatever might have been the reason, the subject seemed to create no interest, and the House was in that condition which might be roughly described as empty when Lord Derby rose to open the debate. Lord Derby, doubtless, did his best, and we readily admit that he deserves great credit for the firm and earnest way in which he vindicated the case of Dr. Hooker. After stating what has been already made familiar to the public, he spoke of the case of the recently discharged Curator's clerk, who won his appointment at the competitive examination last spring:—

“Unwilling,” he said, “to go more than I can help into details—but, as a sample of the way in which matters have been carried on at Kew, I must refer to a matter which occupies the first twenty-five pages of the Blue-book, a signal instance of how departments contrive to make unnecessary work for themselves. It appears that an assistant was wanted for the Curator to perform certain special duties. Those duties involved the keeping of accounts, the custody of stores, the conducting of a large correspondence, and the direction of the foremen employed in the gardens. The appointment is competed for, not by an open, but a special examination, showing that special qualifications were required, and is given,

without any reference to Dr. Hooker, to a man who had been employed in the gardens, well known to the Director, and of whom both the Director and the Curator had formed a very unfavourable opinion. Dr. Hooker's report upon him is—‘Writes indifferently, spells badly, incompetent to direct foremen in regard to stores; no preliminary education or training to fit him for the situation. He has never kept accounts, he has never been in charge of stores, and cannot conduct a correspondence creditably.’ (A laugh.) Dr. Hooker entreats that he may be removed. The Treasury concur; in a letter dated May 2nd of this year the First Commissioner objects; and on June 26th the Treasury repeat their expression of opinion in a letter which is too long to quote, but which I am bound to say, to the credit of the writer, the Lords of the Treasury, and, I suppose, principally of the Chancellor of the Exchequer, does very clearly show that they thought, in this instance, the position of the First Commissioner to be indefensible. The man was discharged at last, and then follows a controversy between the various departments concerned—Treasury, Board of Works, and Civil Service Commission—which certainly points to a very curious state of confusion and uncertainty as to the status of persons holding appointments in the Civil Service. Justice compels me to admit that in this case the Treasury rather tardily set themselves right. But the fact remains that everything in the power of the First Commissioner was done to force on Dr. Hooker a man whom he disapproved of, whom he knew to be unfit, and for whom he could find no suitable employment.”

May we ask, in the face of the man winning at the examination, if the above statements respecting his qualifications be true? Lord Derby then diverged from the contents of the Blue-book, and made a statement which seemed to us, to say the least of it, very singular, and very unjust to the person referred to.

“But, my lords,” said Lord Derby, “I fear that the list of these complaints is not fully exhausted by what appears in these papers. I hold in my hand a statement coming from what ought to be the best authority, to the following effect:—That within the last ten days the First Commissioner has sent to Dr. Hooker two letters containing vague charges of jobbery and mismanagement; one from a late foreman of Kew, who is subject to hallucinations, and who, after engaging himself to another place, without informing the Director, suddenly left, wholly of his own accord, bringing purely imaginative charges against the Curator. For these the man abjectly apologised, and wrote to the Director expressing his regret, and begging that he might be taken into favour again. This man is known to have been for some time in communication with Mr. Ayrton, who, at the last hour, brings him forward.”

This person was, however, not brought forward by Mr. Ayrton in the Blue-book, and had no means of defending himself from a false and ridiculous charge.

The Duke of St. Albans followed in defence of Mr. Ayrton, and showed, by the following letter from Sir Benjamin Hall to Sir W. Hooker, that at least one other Chief Commissioner had felt it his duty to interfere at Kew:—

“I think it necessary again to call your attention to the present state of the gardens at Kew, which I do not consider at all satisfactory. Soon after I became First Commissioner I visited the gardens and pointed out to you the very bad condition of the walks, the coarse appearance of the grass, and the very insufficient supply of flowers for the beds. Hardly any preparation had been made for filling the beds this year by providing cuttings; and when I desired to have a few more flower beds, in order that the gardens might look more gay in the vicinity of the Palm-house, I was told there were not cuttings enough to plant out, upon which I directed that the new beds should be filled with annuals. In short, there was little, scarcely any, preparation made; and when I was at the gardens a few days ago I was informed that very little had been done in the way of making provision for next summer. I also saw that the walks were in a very bad state; the day was wet, and I was thus better able to judge of their condition than if it had been fine, for I could see the hollows in which the water stood most clearly. You agreed with me in the observations I made, and you quite acquiesced in the opinion I expressed, that the condition of the gardens was not at all what it ought to be. . . . The funds provided by Parliament are enormous, and ample for the purpose; and when I compare the state and general appearance of the Botanic Gardens at Edinburgh with those at Kew, and look at the miserable sum of £1,000 which is expended on the Edinburgh Gardens, which sum covers all salaries and expenses of every kind, I am sorry to say that the deductions to be drawn are by no means in favour of Kew. Instead of your having a very insufficient supply of flowers to plant out in the gardens of Kew, those gardens should afford ample supply for other places; and it is very probable that I shall require geraniums and other half-hardy plants to put out in some of the clumps in St. James's Park and Kensington Gardens next year; I must therefore request that you will have ample provision. I wish also that the walks may be put in better order, and the grass kept in a better state, and that you should plant a large number of laburnums, lilacs, and other flowering shrubs in those parts of the gardens and pleasure grounds where they can be placed with advantage.”

Lord Stanley of Alderley ventured to think that the noble earl would not meet with much gratitude from the country for having added this Blue-book to the already too large number which existed, nor from their lordships individually, for having imposed on them the burden of such tedious reading. He disagreed entirely from those who accused Mr. Ayrton of making himself unpopular. From

* “The Rose-Amateur's Guide.” By Thomas Rivers. Longman & Co. 1872.

the nature of things, it was not the man but the office that was unpopular. The Board of Works had to supervise and curtail the expenditure of public money, and if such supervision was carried out with fidelity to the public interests, it must be unpopular among those who are supervised. The necessity for the noble earl's motion had been created by the memorial signed by eleven men of science and addressed to the Prime Minister. He did not attach any weight whatever to some of the signatures of that memorial, among other reasons because it had been called forth, not by sympathy for Dr. Hooker, nor by ill-will to Mr. Ayrton, but by the fact that Professor Owen, of the British Museum, had expressed the views contained in Appendix No. 3 of the Blue-book, that he had severely criticised Dr. Hooker and the Kew Herbarium, and had expressed the desire for its removal to a central botanical museum in London. Besides the scientific hostility to Professor Owen, there existed among some of the partisans of Dr. Hooker hostility to Professor Owen on other grounds, for the discussion of which their lordships' House was not a very fitting place. Dr. Hooker applied to Lord Clarendon to be sent to a Botanical Congress at St. Petersburg as Royal Commissioner. Dr. Hooker was informed that Lord Clarendon, after communicating with the Treasury, had declined to send him to St. Petersburg. He would ask leave to read his reply to Mr. Layard, then First Commissioner of the Board of Works, in which Dr. Hooker took her Majesty's Government to task with an amenity of language which showed that he was a good judge of style,—“I much regret this action of the Treasury . . . mere disregard of international courtesy in scientific matters.”

NOTES OF THE WEEK.

— ON Thursday evening, July 25th, and as Big Ben at Westminster was striking seven, a violent rain storm, accompanied by wind, took place in London and seriously damaged some of the fine young Plane trees on the Thames Embankment. These plane trees are strong and firmly planted, and supported by a cradle formed of three very strong stakes. A species of whirlwind of unusual force swept along the Embankment and twisted off the Planes as easily as if they were feeble reeds. In some cases the tree and its three great stakes were broken clean off within six inches of the ground; in one or two the head of the tree was broken clean off just above the line of the stakes, but in most instances the stakes were broken off, and the tree blown down, but not broken right off. In these cases the trees have been staked up again, and the wounds covered over with adhesive composition; specimens treated thus, show, as yet, no sign of suffering.

— AN interesting garden entertainment was given on Wednesday week to about 300 foreigners of the refugee and artisan class, by Mr. William Leaf, of Park Hill, Streatham.

— WE notice an improvement in connection with the seats in the London parks. A gently rounded granite slab is sunk in the ground by way of a foot rest, while the seats themselves rest on three smaller slabs placed at right angles to the foot rest.

— THE rare and fine *Grammatophyllum Ellisii* is now in flower in one of the orchid houses in the Royal Exotic Nurseries, King's Road, Chelsea. The flower shoot is nearly two feet long, and the racemes bear about forty flowers each.

— SOME beautiful hardy *Begonias* are now in flower in the Royal Exotic Nurseries, King's Road, Chelsea. They are unnamed seedlings, except one kind—*B. intermedia*. All are distinct and beautiful ornaments to the rock-garden.

— ONE of the prettiest and most graceful window plants which we have seen for a long time was a specimen of *Begonia Weltoniensis* shown by a cottager at the Willesden flower show last week. Though it had evidently been a long time under window culture, it was a sheet of bloom.

— *AMPELOPSIS TRICUSPIDATA* is rapidly proving its claim to be planted as extensively as the well-known Virginian Creeper. Mr. Dominy's house, in the Royal Exotic Nurseries, King's Road, Chelsea, is now a glistening sheet of it, from top to bottom, all nailed up too by its own tiny fingers. What a boon will this new creeper prove to all who have high walls to cover!

— Two new *Crotons* about to be sent out by Mr. William Bull are wonderfully fine in their way; one named *C. spiralis*, with foliage of a dark or bronze green, finely marked with yellow spots, has about as true a spiral leaf as is to be found in any class of plants in cultivation; the other, not yet named, has long, linear foliage more beautifully marked than anything of the kind we have yet seen. Mr. Bull has also a finely variegated form of *Erythrina*, the pure yellow markings of which instantly bring to mind the charming *Croton Hookerii*.

— THE cocoa-nut tree at Sion House, that fruited some years ago, is now throwing up a strong flower-spike, and will, we trust, under Mr. Woodbridge's care, produce and perfect another fruit.

— WE are glad to record that the noble *Musa Ensete* is holding its own out of doors this inclement season. Young plants of it are now fine ornaments to the London parks.

— IT may be interesting to know that Mr. Herbst, of Richmond, has just finished cutting flowers of Lily of the Valley from some hundred pots of it that came into flower during the first week in July.

— A GRACEFUL and touching thought has occurred to the promoters of the City flower show. Next year, according to an announcement made the other day, a prize is to be given for the best kept churchyard.

— THERE is now in flower in Mr. Bull's nursery, Chelsea, a number of plants of the beautiful and brilliant little *Lilium pulchellum*. This is no larger than *L. tenuifolium*, and deserves to be associated with that gem in every choice collection of hardy bulbs.

— THE finest plants of *Disa grandiflora* we have ever seen are now in flower in Mr. Salt's garden, at Ferniehurst, near Saltaire. They are grown in shallow pans, and, if we mistake not, enjoy rich manure as much as cabbages do.

— THOSE not familiar with the fine North American *Lilium superbum*, may be interested to learn that there is now a bed of it, and some closely allied forms, in Mr. Barr's experimental grounds at Tooting.

— ONE of the most beautiful bulbous plants in flower at the present time is *Zephyranthes Spofforthiana*, a good bed of which may be seen at Messrs. Henderson's nursery, Wellington Road, St. John's Wood. The plants are about six inches high, and produce large rose-coloured flowers in sufficient abundance to be very effective.

— IN one of the glass houses in the Royal Exotic Nurseries, King's Road, Chelsea, three *Allamandas*—*Schottii*, *nobilis*, and *grandiflora*—may now be seen in superb condition. They are planted out and trained loosely under the roof, and thus treated they present a more natural and attractive aspect than when grown in pots and trained on trellises.

— ON Monday last we saw specimens of *Amarantus salicifolius* two feet high, fine branching bushy plants beginning to assume a very high colour towards the top. These specimens were in a London garden, and have withstood all the recent severities of the weather; this is a sufficient proof that the constitution of the plant is all that could be desired for flower-gardening purposes.

— THE Lime tree has, notwithstanding the wet and cold season, already assumed a spotty half-withered appearance in many parts of London. The Lime should never be planted as a city tree in this country, for the simple reason that in cities it invariably assumes a scraggy, rusty, most disagreeable aspect three months before a town tree should do so. This does not apply in the open country, where it usually retains its good looks till late in the year.

— WE were glad to see, the other day, the beautiful white trumpet-shaped blooms of *Lilium longiflorum* peeping forth here and there from the *Rhododendron* beds near the Albert Memorial, in Kensington Gardens. This is certainly a step in the right direction; but we hope such features will not be overdone. If we have a bed, or several beds, embellished with a charming feature of this kind, the effect is weakened, in fact, it is entirely neutralised, by furnishing every bed in the place with the same subject.

— THE bright-flowered and pretty *Rhexia virginica*, one of the most beautiful of the bog plants of North America, is now in good flower in Messrs. Osborn's nursery at Fulham. It is very rarely seen in good condition in gardens. Although a member of the *Melastoma* order (which is composed, for the most part, of gorgeously coloured tender plants that abound in the warmer parts of America), this charming little plant, which inhabits the cold Northern States, is perfectly hardy in this country. It is called Meadow Beauty in America, and is one of the most valuable plants for the artificial bog, or for moist peaty spots in or near the rock-garden.

— THERE is now in flower in Mr. Peacock's fine collection of Cacti, at Sudbury House, Hammersmith, *Echinocactus Pottsii*, the extraordinary three-legged plant so much remarked at our principal shows this year. It is a gigantic globular kind about a foot in diameter, grafted on and supported by three stems of *Cereus tortuosus*, each about an inch through. One of the legs died not long ago, and Mr. Croucher added another in its place. It is the most curious result of the art of grafting we have seen.

— IN consequence of our extensive reports of the state of the fruit crops throughout the country appearing in the same issue with the monthly calendars of gardening operations, some of our illustrations are crowded out this week.

THE INDOOR GARDEN.

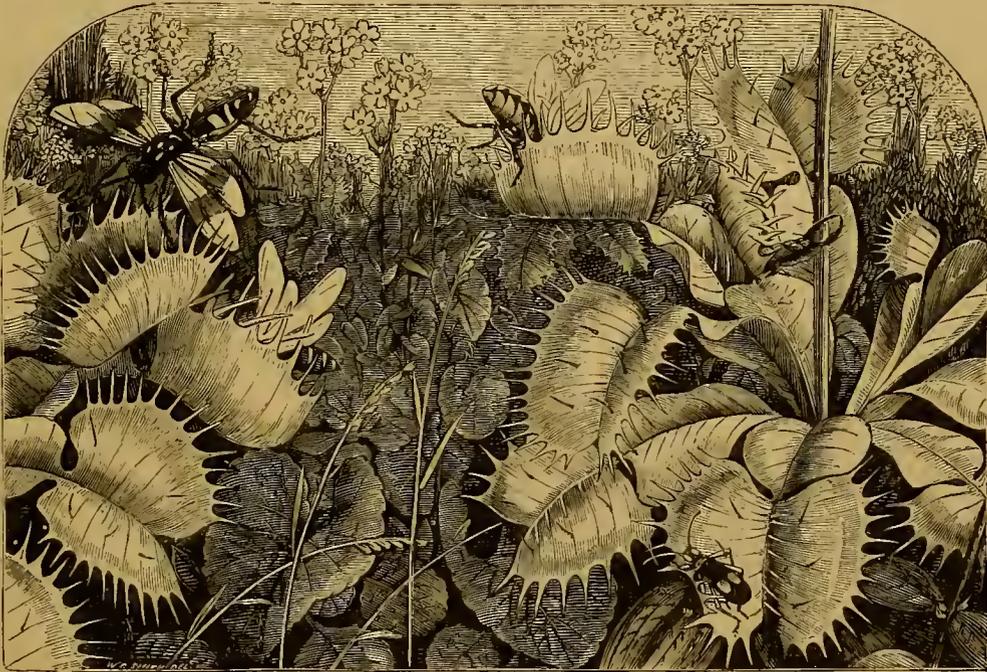
VENUS'S FLY-TRAP.

(*DIONÆA MUSCIPULA.*)

BY THOMAS BAINES, SOUTHGATE.

FEW plants are more generally interesting than this, either to people conversant with curiosities in the vegetable kingdom or to ordinary observers. It is referred to in most works on physiological botany, as affording a striking instance of vegetable irritability. The trap-like extremities of its leaves are so sensitive indeed, that the least touch causes them to close instantly on the luckless fly, wood-louse, or even larger insect that happens to get within their grasp. In the growing season, when the plant is strong, I have seen even a slug, four inches long, held fast by the tail until it was dead; and beetles so large as to protude on all sides from the trap also meet with a slow but certain death. This plant has, indeed, somewhat puzzled vegetable physiologists, some maintaining that its legitimate use in the vegetable world is that of an insect destroyer; others that it is carnivorous, and that it is benefited

little leaf mould, and sand. Pot tolerably firm, using thumb pots well drained; plunge these closely in sphagnum in a pot or pan sufficiently large to accommodate them, giving the whole a liberal watering. If strong, the plants will throw up flower stems; but these should be removed as soon as they are long enough to pinch out. During the season of growth water copiously every day. Towards November the plants will show signs of going to rest, by making a few short leaves; these will be retained during the winter, the larger summer leaves dying off. The soil must never be allowed to become dry, not even in winter, at which time the plants should be placed in a temperature of 50° by night, allowing a rise of some 10° during the daytime. During its season of growth it enjoys a night temperature of 60°, with 75° or 80° by day. Provided the atmosphere of the house (which should be moist) suits the plant, all the crowns that throw up flower-stems will be found to increase naturally by throwing off offsets. Many grow this plant under a bell-glass, but its growth is stronger without than with one. It likes a moderate amount of light, but no sun; therefore, if the house is thinly shaded, the plant should have in addition a piece of thin



Trap-like Appendages of Venus's Fly-Trap.

by the decomposed insects which it entombs. One thing we do know, which is that when a trap has enclosed an insect it retains its hold of it for weeks, or until the insect has become thoroughly decomposed; after that it re-opens. This natural insect destroyer is a humble marsh plant, bearing from the root, on a smooth leafless stalk a few inches high, a corymb of white flowers. From the bulb-like root proceeds, in a radiating manner, a number of leaves on longish stalks. The lamina of the leaf is divided by the mid-rib into two nearly semi-circular valves, each of which is fringed with stiff hairs, and furnished near the middle with three minute bristles arranged in a triangle, which bristles are extremely irritable, and when touched by a fly or other insect cause the two sides of the leaf to collapse with a sudden spring, imprisoning the intruder until it is either dead or ceases to move. It is a native of swamps in North Carolina, and is often to be met with in our stoves.

February or March is a good time to commence its culture. I have found it to grow well in the following materials: Three parts rotten sphagnum chopped fine, two parts fibrous peat broken small, one part broken crocks, the size of peas, a

tissue paper over it in bright weather. This is indispensable. About five years ago I had a large mass of this plant filling a twelve-inch pan. I gave it more light than is usually allowed it, and the traps assumed a beautiful bronzy colour, so much so, as to be remarked by all who saw it. The following year I thought to still improve it by placing it still nearer the light; but one week's bright weather so injured it that it never recovered. I should not advise anyone to commence the cultivation of this or similar subjects, such as *Cephalotus follicularis* or *Anæctochilus*, unless time can be spared to attend every day to their wants, or the result will be almost certain failure.

CULTURE OF HERBACEOUS CALCEOLARIAS.

BY GEO. BERRY, THE GARDENS, DALVEY, MORAYSHIRE.

THESE are best treated as biennials. The seed should be sown about the middle of June, and although I am aware that some make several sowings during the summer and early autumn, I would not recommend such a practice, for I have always been able to obtain a

good succession from the one sowing. After the summer bedding-plants have been put out, I prepare a corner in one of my spent dung frames, which were put up in the beginning of March for the purpose of striking cuttings in, and which a little later were used for starting Gloxinias, Achimenes, Caladiums, &c. In one of these frames, near the glass, I place my pan of *Calceolaria* seed, which is sown in a finely sifted compost of yellow loam, leaf mould, and silver sand. The seeds, which are scattered regularly over the surface, are barely covered with soil. A pane of glass is then placed over them, on the top of which a little damp moss is placed, but this is removed as soon as the seed begins to germinate. Shading, however, is always requisite while the plants are in a young state, to protect them from bright sunshine. As soon as they can be handled, I prepare a few pans or shallow boxes, which I half fill with open, rough material, such as refuse siftings; on these I put a sifted compost a little rougher than that used for the seed-pans, and also enriched a little by the addition of some decomposed hot-bed manure. Into these pans or boxes I prick off the seedlings an inch apart each way, and return them to their former quarters. To one particular point I attach much importance, and that is giving them plenty of air from their earliest stages of growth onwards. If this is not done, they are very likely to damp off. For this reason, then, I always place the seed-pan towards the front of the frame, and tilt up the latter a little both night and day. Should the weather be at all cold I protect the frames at night with a mat or two, according to circumstances. At each shift which the plants receive, however, the air is not left on at night for a day or two, but the first thing done early every morning is to remove the mats from the frames, and to give a little air; then, when the young pricked-off plants begin to meet, preparation must be made for another shift. For this, I use small thumb-pots, quite clean and well-drained; into these I put the young plants singly, preserving the roots and balls as much as possible; some require small pots and some larger ones, according to their respective sizes, and any too small to pot off are shifted to another pan, all being replaced in the frame. The compost used for this potting differs very little from that employed for the last shift. The plants now, however, require considerably more frame-room, and they should be set on a layer of clean sand. When this stage of growth is arrived at they do not require any covering at night beyond that of the sashes, but after they begin to take to the new soil, I tilt up the frames an inch or two both at back and front, in order to keep up a free circulation of air, and thus induce a nice stubby growth. After this no definite rules can be laid down for repotting. It is, however, a bad practice to over-pot, and still worse to pot such as do not require it.

After the second potting they should be gradually so inured to light and air as to do without protection of any kind. I always, however, preserve them from heavy showers and sudden changes of weather, by placing sashes over them, but they do not like too much heat; indeed, they grow far stronger during long cool nights than they do throughout the warmer and shorter ones.

There is no plant easier to winter safely than the *Calceolaria*, for if provided with a temperature of 34° it does very well. I grow annually about three hundred of these plants in the way just described, and nothing repays me better for my trouble. In October or November I transfer them from my frame ground to a span-roofed pit, which, being sunk into the ground four feet or so, is rather damp. The only means which I have of heating it is by means of a very small stove in the centre. This stove is, however, only used as a protection from very severe frost. I cover with wooden frames lined with straw. These will keep out frost of 7° or 8°, and even more. But if very severe weather sets in, I light a little fire in the stove just referred to every evening, never allowing the temperature, however, by this means to exceed 38°, nor to fall below 34°. This pit looks north-west and south-east, and has a shelved stage in the centre. On the sunny side I arrange *Calceolarias*, and on the other *Cinerarias*, wide enough apart to keep the leaves from coming in contact. Here both remain throughout the winter and until they begin to bloom. The winters are often so severe in this part of Scotland that the covers are not wholly removed from the sashes for three weeks together at a time; at such times every alternate one is lifted off at mid-day for three hours or so. If there is a heavy fall of snow, I prefer allowing the covers to remain untouched for several days, the snow being an additional protection. The moment a thaw comes, we remove the snow with broad wooden scrapers, and take off the covers; for if the snow was permitted to melt on the covers, it would so saturate them that the slightest frost would penetrate them in a short time. Under such conditions the plants continue to thrive, and by the middle of February many of them require another shift, which is generally the last they get, unless they are very vigorous, when I repot them again before they come into flower. During spring, unless the sun is very hot, no shading

is afforded them, and a free current of fresh air is allowed to pervade the pit night and day.

Calceolarias cannot withstand droughts, and over watering is equally injurious to them. Even throughout the most severe part of winter the roots must not suffer from want of water, but be kept always moderately moist. *Calceolarias* become dry sooner than most other plants, for even throughout the dull season they continue in growth, and the open, rough material used in potting when they are in an advanced state does not retain moisture long. Water should, however, never be allowed to touch the foliage, but should be given carefully, lifting up the lowermost leaves with one hand, and pouring in water gently with the other. Unless carefully handled the healthy leaves, which are so thick and brittle, break very easily. Should bright sunshine come in contact with a damp leaf, it becomes spotted, unsightly, and is very likely to damp off. For the last two or three shifts, I find two parts good yellow loam, one part thoroughly decayed hot-bed manure, and a little sharp river sand a good compost. These are all chopped up, well mixed, and used in a rough unsifted state. I usually pot all requiring a shift before taking them into the pit; but the size of the pots must be regulated according to the size and vigour of the plant; therefore, at the blooming season some may be in six-inch pots, and others in twelve-inch ones. We commonly go over them about the 1st of May, stake all that require that attention, and bring them up to our blooming house. They get another staking about the end of May. In order to prolong their flowering period, and to bring the blooms to perfection, I give them occasional applications of guano-water. This invigorates them, and brings out that fine deep green in the foliage which is so desirable. Pot-bound plants in particular are exceedingly grateful for liquid manure; but to such as are over potted, it must be very sparingly supplied. When the blooms begin to fade, I turn the plants out, clear them of their stakes, pots, and crocks, break up the ball, and throw it on the vegetable heap. If I want to preserve a remarkably fine sort for next year, as soon as its beauty is over I cut off all the flower spikes, and transfer the plant for a time to a frame with a north aspect, or place it on a board behind a wall; after a time I shake it out of its present pot, shift it into a smaller one, place it in an open cold frame, and afterwards treat it as any of the others; it is never under glass until housed for the winter. Green fly is the greatest enemy which the *Calceolaria* has in the way of insect pests, but well-grown plants are seldom troubled with it, and should they be attacked, tobacco fumigation soon clears them.

GOMPHOLOBIUM POLYMORPHUM.

ALTHOUGH this is one of the most beautiful of greenhouse climbers, and a plant which, when properly managed, remains in beauty longer than most things, and is equally valuable for exhibition or decorative purposes, yet it is rarely seen in anything like perfection. The first time I saw a well-grown plant of it was at the Horticultural Society's exhibition at Chiswick in May 1847; this was exhibited by the late Mr. Hunt, then gardener to Miss Traill, and was trained upon a half-round wire trellis, four feet in diameter, which was clothed from top to bottom with delicate foliage and bright red pea-shaped flowers, together with multitudes of buds in all stages of forwardness; it was awarded (and justly) an extra first prize or gold medal. I, as well as other plant growers who saw it, admired it greatly, and considered it well deserving the high award it received; but I thought that if it could be trained upon slender stakes in the bush form, it would look more natural, have a more graceful appearance, and correspond better with other plants when staged among them in a collection; for much as I admired the plant shown by Mr. Hunt, I could not help thinking that, trained as it was, it had an appearance of stiffness and formality which greatly detracted from its beauty. I soon found an opportunity of trying what could be done in growing a specimen of this without the assistance of a wire trellis, and succeeded to my own satisfaction, as well as that of all who saw it.

Persons intending to commence the culture of this *Gompholobium* should procure young plants as soon as possible, choosing those that are clean, strong, and healthy-looking, and which appear to be well rooted and firm about the collar. In choosing young plants to be grown into specimens, it will be found to repay the trouble to see that they have their stems or collar strong in proportion to the size and strength of the rest of the plant, which is often delicate; and if plants which are not perfectly sound in the stem are selected, their progress will never be satisfactory, and the chances are they will not live to attain any useful size. Directly the young plants are received, they should be repotted and placed in an intermediate house, where a nice moist temperature of about 55° is maintained. In potting young stock for starting, I prefer giving a liberal shift, say from a three-inch

pot to an eight-inch one, which allows more space for placing the stakes for training shoots upon. A few slender green stakes, according to the size of the plant, should be placed in the soil at once, and the shoots trained round them, taking care to cover the bottom with the likeliest shoots for breaking strongly. In potting now, and on all future occasions, care must be exercised to have the ball of the plant in a healthy state as to moisture and also the new soil; great care must also be used in watering, especially until the roots can strike into the fresh soil; and the atmosphere should be kept rather closer and moister at this time, so as to avoid as much as possible the necessity of frequent waterings, and to encourage active growth. Keep the plants near the glass, and as soon as the sun becomes powerful, a thin shade must be used, for this variety is impatient of exposure to bright sunshine, and anything approaching free vigorous growth need not be expected, unless it is shaded; and although air should be admitted whenever this can be done without cooling the temperature below 55° or 60°, yet this should be done very cautiously at all seasons, and especially during the prevalence of drying winds, so as to avoid draughts—for a current of cold drying air playing upon a plant for a few hours when it is in free growth would sadly check its progress or probably ruin it. Hence, while air should be admitted freely on every favourable opportunity, this must be done so as to avoid draughts or cause cold currents to pass through the plants; during bright warm weather, however, sufficient ventilation must be given to prevent weakly growth, and the plants should be moistened overhead two or three times a day, and the atmosphere kept damp by frequently sprinkling the passages, &c. If the plants do well the first season, they will form nice little bushes, and will fill their pots with roots; but they must have frequent attention in the way of training their shoots, for if these are allowed to twine upon each other, neither the wood nor the foliage will be properly developed; and although training may prove a rather tedious part of the attention required to grow this plant properly, it must be attended to, and this is a formidable job enough; but when the young growths are not allowed to become entangled, it will not occupy much time if done, as it should be, at short intervals, adding extra stakes as may be required. I generally remove my young plants to the hardening greenhouse in August, placing them where they will not be exposed to through draughts of dry air, and by gradually reducing the moisture in the atmosphere, &c., the wood will get sufficiently ripened to stand the winter, and the plants will continue growing slowly until November, when they may be safely wintered in an ordinary greenhouse, but they must not be exposed to cold frosty winds, and drip should not be allowed to fall upon them; and as the plants, too, during the winter, will be in a comparatively inactive state, they must be carefully watered at the root, keeping them rather on the side of dryness than otherwise, but when water is applied enough should be given to moisten the whole of the ball. The treatment during the second season should be similar to what has been recommended for the first, repotting early in March, giving a rather liberal shift, re-staking and training, placing them in an intermediate house, and attending to them throughout the season as recommended above; if very large specimens are desired, a third season's growth will probably be necessary to produce them. When the plants have reached the desired size, if they are wanted for purposes of exhibition, it will be necessary to use means to secure having them in the greatest possible beauty at the proper time; to be successful, you must not only be able to grow handsome specimens, but also to have them in full beauty on a given day. As a rule, I leave specimens of those which I intend for exhibition in the greenhouse until April, and then remove them to the intermediate house, earlier or later in the month, according to the state of the plants and the time when they may be required. But as to the time at which a plant can be brought into beauty, this can be easily learned by careful observation for a season or two—and by that means only—for a healthy plant, with its pot well filled with active roots, will be in full bloom before another with imperfectly ripened wood, and not over healthy or active roots, will show any symptoms of having felt the excitement, which, if it had been in perfect health, would have been sufficient to have induced it to put on its best appearance. For plants in a sound healthy state, with well ripened wood, from a fortnight to a month in the intermediate house will be sufficient to bring them into full beauty; but others, with imperfectly matured roots, may require longer. I can, however, only say that there can be no mistake in having the plants early enough, for a vigorous plant of this *Gompholobium* will be in full beauty for a month at a time at least.

The soil which I find to be most suitable is the light fibrous kind of peat found in Kent; this, broken up moderately fine, and cleared from excess of fibre and strong decayed roots, and mixed with about one-fourth its bulk of Reigate sand is the compost I use. In potting, care should be taken to have the soil in a proper state as to

dampness. I use soil just moist enough to bear compressing in the hand without sticking together or readily falling to pieces; and, in potting, the fresh soil should be pressed about the ball, so as to make it as nearly as possible in the same state as to water as the ball of the plant. There are two other twining varieties of *Gompholobium* well deserving a place in every collection, viz., *G. splendens*, which, when grown in the form of a bush, and clothed with its clear bright yellow blossoms, is one of the most charming plants I know of, and *G. versicolor*, the blossoms of which are large, and remarkably striking.—W. M.

LONDON GARDENS.

THOSE prim Roman horticulturists who gave birth, through later Italians, Spaniards, and Flemish, to the Dutch ideal of Nassau William, have much to answer for to modern citizens of Cockaigne—much in the way of sanitary loss, and more in that of artistic culture and mental recreation. We have to thank Virgil, the *irréconciliable* uprooter, for many miles of bare brown mould, and rood after rood of naked grey-brick walls, bordering habitations that are assuredly in some need of relief and ornament, in thoroughfares of the city that might have been made gay and gracious. There is not in London the excuse that could be alleged for such a state of things in Paris, Berlin, or nearly every capital of Europe, with the exception of Vienna. London possesses more open spaces than any of these cities; and it does not grow inwards, compress its streets, raise its houses, curtail its gardens; but spreads outwards into suburb after suburb. What could not be made of these facilities for brightening the aspect and purifying the atmosphere of the legendary *ville vaporeuse*? Long lines of Corisande's gardens, small wildernesses, after neglected Bacon's plan, could be made to yield not a little corporeal and æsthetic enjoyment. But the great aim of the Cockney gardener is neatness, not health or beauty *pure et simple*. So that his small estate is free from broken bottles and rubbish, he is content that it shall be free from flowers also during the greater part of the year. He enjoys the blank surface of black mould, the trim bare shrubbery, where not one dead leaf remains half a day, the clean gravel walks and regular box borders, all arranged with the painful nicety of a Flemish kitchen garden. But Flemish kitchen gardens produce very acceptable viands at times, and the city horticulturist's domain contains nothing. It is dingy, dull, and wet and naked in winter, spring, and early summer. When the bedding-out period arrives, the professional nurseryman is communicated with, and sends in a cartload of petunias, verbenas, geraniums, and the like, to clothe the desert gorgeously for about six weeks or two months in the year. The result is a meagre, formal prettiness of the old Keepsake, or Souvenir fashion—a prim, pruned, and, as it were, starched and whaleboned beauty of the class that looks well in the family portrait gallery, but with which one scarcely cares to form an intimate connection. The same system of planting is followed in nearly all parks and squares. In the vast majority of great seigneurial pleasaunces the same facts are observable. They are bare the greater part of the year, until the owners desire to make a display before their guests at the shooting season. Their aspects are imitated by all the ignorant amateurs who have charge of what should be oases of beauty and ornament in numberless urban thoroughfares. Women with a chastened taste for the pastoral have charge of all; and they are swindled and brow-beaten by the professional gardener, and inoculated with the severe notions of the small local *Le Nôtres*. They hold box sacred as Druid's ivy, a brick wall a necessary horizon, a spick-and-span lawn and weedless beds the highest possible attainment of art, and the brief blaze of geraniums once a year the very apotheosis of all horticultural success. Hideous as such culture makes them, it is no matter for wonder that scarcely any proprietors of urban gardens ever make the slightest use of their domains for purposes of rest, exercise, or recreation. There is no school in Great Britain at which the elements of garden culture are taught, yet a change would be easy and inexpensive. No deep education is needed, for instance, to devise an improvement on the blank walls, which suggest the next-door neighbour as a creature to be more guarded against than the chance acquaintance of a foreign *table d'hôte*, or a stranger in a railway carriage who proposes cards. Against the smoky, gloomy, grey bricks a bank of mould can be raised, and bushes, flowers, creepers, planted thereon, so as to almost give the idea that a Clapham back garden is bounded by the primeval forest. An immense variety might be achieved in the smallest villa back gardens. Since it is seemingly ineradicably British to have a weakness for wall-paper patterns in beds, they can be retained, they and the masses of colour; but other nooks can be devoted to informality, change, and indefinite variety.—G

PUBLIC GARDENS.

PARIS PUBLIC GARDENS IN 1872.

THE base uses to which ornamental grounds may come at last were strikingly illustrated by the fate of the Paris parks and squares in the evil days which visited the city after Sedan. None of these familiar and cherished oases were absolutely destroyed, but all were more or less battered, and made to serve purposes which the Emperor Napoleon's Prefect of the Seine never contemplated. The garden of the Tuileries was turned into a military camp and a point of departure for the balloon-post; the Luxembourg Garden was made a cattle-yard; ambulances and oxen shared the space enclosed by the Jardin des Plantes; parks of artillery were massed in the square of Notre Dame and the Place Royale; the parks of the Buttes Chaumont and Monceaux, and the squares at Batignolles and Montholon were utilised as depots for petroleum, while other of the larger squares, such as those of Belleville and the Arts-et-Métiers, became drill-grounds for the National Guards. Under the Commune the parks, gardens, and squares suffered more even than during the investment of Paris by the Germans, and when, after the defeat of the Commune, M. Alphand was enabled to resume the direction of the public parks, he found them in a condition calculated to induce despair in the mind of any but the most resolute landscape gardener. The work of resuscitation was, however, boldly commenced, and in the gardens of the Tuileries and the Luxembourg young trees were planted in the numerous empty places which the fortunes of war had created. The same thing has been done in the Cours la Reine, the avenue of the Champs Elysée and along the old exterior boulevards, the work of replanting meanwhile rapidly going on in all the smaller green places of the city. Some of them have already assumed their normal aspect, and look as fresh and bright as if there had been no siege of Paris and no burning of the public buildings.

The park of the Buttes Chaumont was a remarkably warm place during the assault by the Versailles troops. The insurgents left it with three batteries, commanded by the Count Raoul du Bisson, the cannon of the Versailles firing upon them without intermission, it being estimated that 30,000 shells fell upon the park during the struggle. This hail did not do so much damage to the park itself as might have been expected, the greater number of the shells burying themselves in the ground. But the pavilions of the Guards and the Café de Puebla were demolished, and the basin of the lake was shattered in various places. To day nothing remains to bear witness to the fierceness of the fight. The pavilions have been rebuilt, the café patched up and painted, and the lake which, in September 1870, served as a magazine for petroleum, and on the 27th of May in the following year formed a grave for a hundred insurgents taken red-handed in the park, has been repaired. The only souvenir of the insurrection which the parks afford is to be found near the Café Puebla, where rises a little column of exploded shells. The Monceaux park has been repaired with equal promptitude and completeness. The big trench dug for the storage of petroleum barrels has been filled up and turfed, the garden beds have been dug up and raked over, the trees trimmed, and the spot where, on the 21st of May 1871, the three Italians and the three deserters from the regular army were shot and buried, has already become a tradition, involving a difference of opinion as to the precise locality of the temporary grave.

The squares of the Tour Saint Jacques, de Montronge, des Invalides, de la Place Louvois, de la Place Royale, de la Place Laborde, de la Place Vintimille, de Sainte Clotilde, de la Rue Mouge, and du Temple are amongst those which have suffered least by the incidents of the two sieges. The grass-plots and the flower-beds were trampled on, and in some cases the trees slightly injured; but a few days' work served to put them right again. The squares of the Batignolles, the Innocents, and Montholon have been repaired, and in the last-named the large trees have been pruned and trimmed. The fountain of the nymphs, which adorns the centre of the Square des Innocents, was struck by a shell and some of the sculptured work broken off. This has been remodelled, and the square swept and garnished. In the Square des Batignolles the breaches made in the basin of the fountain have been prepared, and the parterres re-sown with flowers. The deep trench for petroleum which ran across the main sward has been filled up, a slight depression of the ground alone marking its former course. On the side which borders the Place des Batignolles is shown the spot where were "provisionally" interred fourteen insurgents taken with arms in their hands behind a barricade. The squares which suffered most severely were those of Belleville, the Arts-et-Métiers, and Notre Dame. The Square des Arts-et-Métiers has been rendered passable. In more peaceful days this square was notable for an immense border of rhododendrons,

but for some inscrutable reason these have been transplanted to the Bois de Boulogne, and have been replaced upon three sides of the square by a fringe of ivy. As to the old square of Belleville nothing remains of it, the Administration having found it necessary to remake it entirely. It was here that the insurgents, elsewhere utterly beaten, made their last stand. The fight commenced at two o'clock in the afternoon of the Saturday, and lasted throughout the night, the firing not ceasing till nearly ten on Sunday morning. When all was finished they found dead in the square seven insurgents, eleven soldiers, and three horses—not a heavy return for a fusillade of twenty hours' duration. But if the combatants escaped with small loss, the trees suffered seriously, there not being one in the square that has not its wounds to show. These form the most striking evidence which the Paris parks and squares afford of all the city has gone through since September 4, 1870, and it must be confessed that they are not much. A bullet-hole in a big tree is not easily found by an anxious tourist, and, when found, seems hardly worth while making a note of in a city where bullet-marks must by this time be as common as chimney-pots amongst less emotional communities.—*Graphic*.

DRINKING FOUNTAINS IN KEW GARDENS.

A CORRESPONDENT of the *Times* calls attention to the very small supply of drinking water there is in the much crowded gardens at Kew. "To make the circuit of the gardens, visiting in order the several houses and museums, and giving fair time to each, occupies from two to three hours of almost continuous motion; and in hot summer weather, especially with children, much thirst, which practically there is no means of quenching, is the inevitable consequence. There are, it is true, three drinking fountains, but of these one is outside the gates, one at the end of a wall at the side of the gardens, and the third in the arboretum, which also is practically outside, and not one, I believe, near the houses; so that, while surrounded by water-pipes, not a drop of water can be obtained for drinking, except by leaving the gardens or traversing almost their entire width for that purpose. Even when the fountains are reached, the supply they afford is totally inadequate to the demand, and the mere process of drawing and drinking the water occupies so much time as to tire the patience of even the least importunate, when numbers are in want." [We have often witnessed this difficulty at Kew, and hope it may soon be remedied. The few absurd little drinking fountains at present there are mere apologies for those that are really wanted.]

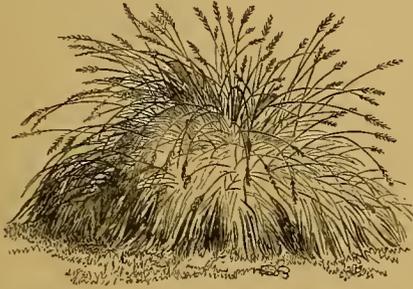
Railings.—No one who walks along the Strand can fail to see how vastly the church of St. Mary-le-Strand is improved in appearance by the removal of the railings which surrounded it. And assuredly, in the present scarcity of iron, we could well spare the railings which now sadly mar the architectural effect of St. Paul's Cathedral. What, indeed, is the use of half the railings of London? The noble owner of Ebury Square is going to set a great example by turning the square into a public garden, and it is impossible to over-estimate the boon which might be conferred upon the people of London if the example were generally followed. We do not believe that it would be generally abused. There are some obvious considerations which might prevent the abolition of park railings, but we are confident that the men who shall combine together to wage war against every needless railing, would be among the benefactors of their race. For, considered artistically, the railing is an eyesore; considered economically it represents a waste of iron and labour; considered as a protection against the burglar it is inoperative; considered with regard to the public freedom it is a nuisance. Let reformers arise to beat these spears into pruning-hooks, or any other useful articles for which there is a demand.

Vegetation in Towns.—Of Chinese and Japanese plants for town ornamentation I have the greatest hope (Conifers alone excepted); and this mention of Conifers reminds me that I shall be glad to discuss how far the classification into natural orders is a safe guide for satisfactory suburban planting. Take two extremes: nearly all Coniferae fail, while nearly all Saxifragaceae thrive. On the other hand, the vitality and smoke-enduring powers of that varied but most ornamental order Rosaceae vary very much. *Cistus laurifolius* does pretty well, and is now in full bloom. *Lithospermum prostratum* was not cut off or materially injured by the late spring frost of this year, in the midland counties. *Dimorphanthus mandshuricus* (which I take to be *Aralia spinosa*) looks as well as anything in the garden, and looks like a noble relative of the various plants of *Rhus typhina*, *Raphiolepis*, or the *Skimmias*. *Ligustrum japonicum* and *coriaceum* are perfectly hardy, and, like *Rhododendrons*, accept resignedly a thick winter coating of soot, and cheerfully push out new growth, strangely contrasting in colour with the old leaves. *Daphne Flouiana* (or *Neapolitana*) is a perfect gem, and bears ten times as many flowers when planted out as it did before its escape from the greenhouse.—W. T.

THE FLOWER GARDEN.

POA FERTILIS.

Just within the main entrance of the Royal Gardens at Kew, a very graceful-looking grass might have been seen isolated on the turf during the past few years. It is a comparatively dwarf subject, and not at all striking in bloom like the Pampas, but with a very distinct and desirable plant. It is one of the most elegant of grasses, forming dense tufts of long, soft, smooth, slender leaves, which arch outwards and downwards in the most graceful manner on every side, and, in the flowering season, are surmounted by airy, diffuse purplish or violet-tinted panicles, rising to a height of from twenty inches to three feet, the grassy tufts being usually about half that height. This plant is widely distributed over Southern Europe, Northern Asia, and North America, in wet meadows and on low banks of streams. Of all the dwarf perennial



Poa fertilis.

grasses it is perhaps the best for isolation on grass, where its fine dense and graceful tufts of long hair-like leaves and elegant panicles form quite a distinct-looking and ornamental object.

SUMMER TREATMENT OF CARNATIONS AND PICOTEEES.

To insure good bloom both Carnations and Picotees now demand particular attention. Disbudding, if not already done, should be at once effected, leaving on two, three, or four buds, as may be required. If they are grown for exhibition purposes, two blooms will be sufficient; but if not, a larger number may be left. Green-fly is sometimes at this season very troublesome. It should either be brushed off with a soft brush, or the affected parts should be dusted over with Pooley's tobacco powder, which should be used early in the morning while the dew is on the "grass." If the insects are very numerous, and means for fumigating are available, let this be done, as it is the most effectual remedy. During the time the buds are swelling, a little weak manure water may be given about twice a week. As soon as the buds become sufficiently full, they will require tying. The plants should be looked over every day, and those buds that are quite full should have a narrow strip of bast tied tightly round the middle of each pod, at the same time opening each division of the calyx; this latter is a very great assistance to them, and will often save a pod from splitting, even if it is not tied at all. By thus keeping the pods from splitting, the blooms keep much more compact and circular in form. As soon as any of the blooms begin to open, they should be protected from rain. This may be accomplished by setting the plants in a greenhouse, provided plenty of air can be given, which is very essential. Constant attention to watering is also absolutely necessary during the time they are in bloom, so as not to allow them to get too dry. They should be shaded from the sun, but should have as much light and air as possible at all times. Should the weather be hot and dry, the foliage should be sprinkled one or twice a day, avoiding to wet the blooms. This will be a great assistance, and will help to prolong the bloom. When the plants have done flowering, they should be returned to the open air, so as to get the shoots in good condition for layering, which operation should be performed early in August. The process, which is a very simple one, is this:—Prepare some light, rich, sandy soil; stir the soil out of the pots to a depth of about two inches, and fill up with the prepared soil; the layers should then have the leaves cut off to within the third or fourth joint from the top; then take the layer in the left hand, and with a very sharp knife make an incision in the under side, beginning about half an inch below the

third joint, and extending it upwards through the centre of the stem, about half an inch past the third joint, cutting off the lower end or heel of this "tongue" just below the joint. The layer will then require to be pegged down. A most suitable peg for this purpose can be made from the common brake fern used in a green state. Take care not to press the layers more than half an inch deep in the soil, as they root much better when shallow, and keep them as upright as possible. In dry weather they should be frequently sprinkled with a fine rose water-pot, so as to keep the soil in a moist state. In about a month or six weeks they will be sufficiently rooted to be taken off and potted into small pots.—*John Ball, Slough, in "Florist."*

BRIAR OR MANETTI ROSES.

MAY I ask my brother rosarians two questions? 1. Is the maiden bloom of the briar superior to that of the Manetti? 2. Does not a two or three year old rose on the Manetti often produce blooms equal to the maiden blooms of either briar or Manetti? Mr. Reynolds Hole, in his most interesting and amusing book on roses, lays down two laws, first, that the maiden bloom on the briar is superior to that of the Manetti, and that this fact is generally granted; and, second, "If you propose to grow roses for exhibition, i.e., to grow them in their full perfection, you must grow them on your own stocks from buds." Now, I have the very highest opinion of Mr. Hole's judgment; his book I know by heart, and it certainly has made me a rosarian; but yet, with all deference and humility, I must say I doubt both of the above statements. My experience proves the contrary to both his premises, but more especially to the latter. If I had not proved that roses bought from nurserymen last year won first prizes this summer at Hereford and the Crystal Palace, I should be very reluctant to doubt for one moment Mr. Hole's statement, but in all my stands this year I never showed one maiden bloom. Indeed, I could not, for I had none to show; my trees were so backward that they are only blooming now, the third week of July. Last year, Mr. Baker, of Heavitree, won nearly every first prize at the Crystal Palace and Hereford, and he did not show one maiden bloom, for the good reason that he does not bud either briar or Manetti. He beat all the nurserymen at the Exeter rose show last year, and they, of course, were showing nothing but maiden blooms. But with regard to the question as to which is the best, the maiden bloom on the briar or Manetti, I desire information very much, for I cannot myself see that the question is foregone in favour of the briar.

JOHN B. M. CAMM.

Monkton, Wyld, Charmouth.

HEPATICAS.

My collection of these comprises the fine and showy *H. angulosa*; a fine purplish mauve-coloured variety, which I received under the name of "single mauve," and which I have also met with under the name of *H. Barlowii*; the single blue, red, and white varieties; and the double forms of the first two, namely, the blue and red. The single varieties are very pretty indeed; but whether for pot or border culture, the double flowers are to be preferred, as they continue much longer in bloom. It has always struck me that the double varieties are more floriferous than the single ones. An east aspect, and a deep, strong, loamy soil, suit the Hepaticas best. In old gardens I have frequently met with splendid clumps of them, growing on the edges of shrubbery borders, sheltered considerably by means of overhanging branches, and yearly fed by the decaying leaves that fall so plentifully about them in the autumn. Such conditions as these appear to minister to their welfare in the highest degree. During last spring I met with some long-established clumps in the garden of a farmhouse in Kent, on a somewhat open and sunny spot, but in a soil that produced fine hops—a deep, holding, yellow loam, resting in a cool bottom. I attempted to dig up one of these clumps, and found the roots had struck down deeply into the soil—quite a foot in depth; and therein, no doubt, lies one secret at least of their well-doing. It is in the very nature of the Hepatica to strike its roots down deeply; consequently plants of it seldom succeed in a shallow soil, and never in a dry, hot one. The hardest frost or the most searching cold does the plants no injury; if they die, it is invariably from some cause over which the cultivator has control. I am not aware that any systematic attempt has ever been made to improve the varieties of Hepatica by means of seed. As self-sown seedlings appear to be not uncommon, it may be that some intelligent fertilisation might accomplish more than is generally supposed. As, however, particular varieties cannot be depended on to come true from seed, it is necessary to resort to root division. In this manner the Hepatica is readily propagated, and immediately after blooming,

Just when the plants are actively engaged in the production of leaves, is the best time for the operation. If well rooted, single eyes will make good plants by the following season, and they should be planted in a bed of deep and rather light loam, which should be in a position accessible only to the morning sun. Cultivators of the *Hepatica* recommend that the plants should be parted not oftener than once in three or four years, as frequent divisions are apt to weaken them, and cause some to die. In cases where *Hepaticas* are largely used for the spring garden, and where they have to be removed to make way for the summer bedding plants, it is well to have a reserve border in a suitable place, and there should be plants enough to allow of only one-third being used each season. This reserve garden need not occupy a large space, and, if managed in the way indicated, would always yield a supply of strong three-year-old plants for the embellishment of the spring garden. A few should be grown in pots and wintered in cold frames, both for the sake of their charming flowers and for their usefulness for house decoration. It would suffice to repot these about once in two or three years, according to the size of the plants; and this also should regulate the times of their occasional division. When repotted, and when out of flower, they should occupy a position in an east border well shaded by trees, and should be set on some coal ashes. Watering must not be neglected during dry weather, especially when the plants are maturing their growth. A few blooms of *Hepaticas* make a charming button-hole, and the double flowers last a long time. Q.

A Wall Rose Garden.—I have lately seen, as I did last year at the same season, two walls completely covered over with Banksian roses, which have flowered abundantly in their season, and which are now well furnished with flowers of different varieties of Tea Roses, Bourbons, and Hybrids, in various colours. These, I need hardly say, produce the most beautiful effect. This result has been obtained by grafting on the Banksian, varieties such as General Jacqueminot, Souvenir de la Malmaison, &c., giving the preference to the more vigorous kinds. The grafts and buds having taken, the branches of the Banksian were bent down, and the shoot soon developed itself with great vigour. [We take the above from the *Revue Horticole*. A wall embellished thus must be very beautiful, and we recommend the practice to those possessing well-covered walls of Banksian Roses.]

Acacia dealbata.—What a lovely wall plant this is! Talk about the grace of a fern—there are very few ferns that equal it, except we go to such as *Leptopteris superba*. The great beauty of its foliage is most apparent when the plant is growing freely in the open air, as I saw it the other day in Mr. Harrison's garden at Weybridge Heath. It is one of the finest of all subjects to plant against a sunny wall, wherever the soil is warm and well drained. To train it rigidly is of course to rob it of all grace. The main stems should be affixed to the wall, and the others allowed to grow forth in their own way. The plant will sometimes be cut down by frost, but it will spring up again. This occasional and partial destruction is really a gain instead of a hindrance to the enjoyment of the plant. When destroyed to the surface of the ground, it sends up more vigorous shoots and more beautiful leaves than are produced by old plants in a favoured clime.—W.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Rose Bessie Johnson.—Messrs. Curtis, Torquay, exhibited a box of twelve blooms of this beautiful new blush rose at the late Crystal Palace rose show, where it received, as it deserved, a first-class certificate. Its fine form and sweet perfume attracted general attention, and it is said to be as hardy and free flowering as *Abel Grand*, which is one of its parents.

Asclepias princeps.—I noticed a good species of *Asclepias* flowering in one of the London nurseries the other day, a sort that seems to me to be one of the best in cultivation. It was named *A. princeps*, but it seemed to agree best with the species described as *A. incarnata*. It grows about three and a half feet high, and produces purplish red flowers freely on the top of the stem, and for this reason appears the most useful kind for garden purposes, as the flowers of *A. Coruzzi*, *Douglasi*, and *speciosa* are almost hidden by their foliage.—T. S.

The Large Evening Primroses.—How beautiful are the tall and large-flowered *Oenotheras* that now so conspicuously adorn many of our gardens. It should be generally known that these plants will grow in any wild or rough place associated with the foxglove and the willow-herb. Seed may be sown now to secure plants to bloom next year. We lately enjoyed a moonlight ramble among quite a forest of these noble night bloomers at Glen Andrea, that have been very lovely for many weeks past.

Watering and Mulching.—A good deal towards securing continuity of bloom and vigour of plant may be done now by keeping the earth cool and moist. Copious waterings and mulchings or surface coverings will help to do this. For the latter purpose coco-nut fibre or moss is the most suitable in the flower garden. Any rough, slow-conducting material will check the penetrating powers of the hot, thirsty sunbeams, and thus prevent the earth from being unduly heated or too much baked, and its moisture from being stolen and given to the air.

THE GARDEN IN THE HOUSE.

WINDOW PLANTS.

BY J. C. NIVEN, BOTANIC GARDENS, HULL.

(Concluded from p. 70.)

GENERAL REMARKS AND SUGGESTIONS.

THE usual position occupied by window plants in general is on the ledge, outside in the summer time, inside in the winter. In both cases it will be advisable to have some protection, so as to prevent the plants from toppling into the streets on the one hand, or, on the other hand, on to the floor of the room. Any neat little fancy guard will do inside, but I would suggest for the outside a box made sufficiently wide to overhang the window-sill by two or three inches, and to be six inches deep. In this the pots might be set, and surrounded with sand or ashes, or, better still, with soil; and if the latter, then at each end a few seeds of climbing *Nasturtium*, or *Convolvulus major*, or both mixed together, may be set, and by adjusting a few strings, may be trained up the sides of the window and festooned across the top. Not only is this desirable result and additional attraction to the room window attained by adopting the box arrangement outside, but the pots, plunged in the cool material, will not require nearly so much water and attention as when exposed over their whole surface to the action of a blazing summer's sun, which must be the case on an unprotected window ledge. *Ventilation* is a necessity as well in winter as in summer, and though in newly constructed houses the windows are usually made to open above as well as below, still in many of older date the lower sash only is movable, hence, when opened, the plants are placed in a draught. This is alike prejudicial to the health of plants and human beings, especially in winter. So if the temperature outside is very cold, set your plants either on one side or on the floor, replacing them after you close the window; but if the air be mild you can close the door, throw the window well up, the higher the opening the less the draught, and leave the plants to enjoy the fresh breeze. Never put your plants on a high shelf, so as to be "out of the way," during night, as the higher their position the hotter is the atmosphere in which they have to exist; consequently the plant is robbed of its fluids by an unnatural evaporation. These remarks are especially applicable to rooms in which gas is used. Rather place your plants on the floor. During summer, if you cannot arrange for your plants outside on the window-ledge as previously suggested, it will not be much trouble to turn them out of doors every night, even if it is only into a backyard. The cool refreshing dew of heaven is, in the absence of rain, nature's great restorer of exhausted energies. Leaves, as I before stated, exercise during the day their power of evaporating moisture, but they have likewise the power of absorbing moisture during the night. With the coolness then prevailing the moisture becomes condensed on their surface and forms dew.

Plants in a room are sure to have their leaves coated over with a deposit of dust. Where the leaves are smooth, or, I ought to say shiny, this may be readily removed by washing; but where the leaves are soft and covered with hairs, some injury is sure to be done, be the hand ever so gentle that applies the sponge. However, the injury will do less harm than the dirt incrusting the leaves; and as it is much easier to keep one's own face thoroughly clean by washing it every day, so with your plants, in a room especially where fires are in constant use, wash them often, say at least once a week, and before the leaves are dry, sprinkle them well with clean water. When you syringe your plant always lay it on its side; the water used in this process will not then run into the flower-pot. If it does you may get your plant what is called "water-logged." In the summer-time a day's rain, gentle and continuous—nature's shower bath—will be more effectual than sponging and syringing, even by the most loving hands. So in summer never let your plants miss a general shower.

A WORD NOW ABOUT INSECTS.

All plants are subject to these pests, some more, some less; but take this as a truism that the healthier and more vigorous the plant the less liable it is to the attacks of insects. Of these perhaps, the greatest pest is the green fly, to the development of which the usually dry air of a dwelling-room is highly conducive; and when I say that they live on the juices of the plant, it will be obvious that they must be detrimental to plant life. They are robbers of your plant stores, and war must be waged against them. Now what is the best mode of annihilation? If you can only catch the first one that appears, and a sharp eye can do this, give him a "pressing" invitation to depart. If ever you notice a curled leaf or part of a leaf, examine it carefully below, and mind, "notice to quit at once" must be given, because a day's delay may give you a small colony. Supposing you miss insect No. 1, and find a colony

established, nay, perhaps several colonies, before you have noticed them, what is to be done? Take it as a broad principle that they hate tobacco, whether in smoke, water, or snuff. The most effectual form of applying tobacco is in smoke, as it then finds its way into every crevice and corner. But it will not avail to get the master to merely puff at the deprecators as he is enjoying his pipe of an evening; they would laugh in their sleeves at that, if they had any. They must have something more concentrated. Then what's to be done? You have a washing tub—of course you have—lay your plants carefully on their sides in it, over it stretch a towel previously wet, and wrung out; mind there are no holes in it. A bit of glazed calico lining would be better. Make, however, a tiny opening in one corner just big enough for the stalk of a pipe, then enlist the services of your husband, let him fill a good long pipe—a Churchwarden will be best—then light it in the usual way, cover the bowl of the pipe with three or four folds of an old duster or pocket handkerchief, and then let him blow through the same. I know he'll tell you he has got at the wrong end of the pipe, but tell him to blow away, and the green flies lying dead at the bottom of the tub after the operation is over, will be pretty good proof that for once in a way he was at the right end of it, however much he may have thought to the contrary. Two things I must mention as important ingredients in insuring success—first, the plants should be thoroughly dry as regards their leaves—wet repels smoke; and secondly, the pipe stalk should reach the bottom of the tub—smoke prefers to ascend rather than descend. The difficulty which usually attends fumigating, as it is called, is the reason why I have felt obliged to give this detailed description of a process which I have adopted myself with success. The tendency of all plants grown in a window is to get what we call "leggy." This can only be prevented by cutting down, which I alluded to in speaking of repotting geraniums after their bloom is over, but it may further be materially prevented by pinching out the points of the shoots when they are making their young growth preparatory to flowering. Of course some discretion must be used in this operation, else you may get a very bushy plant without any bloom; and as a guide I would say pinch out the growing points of the shoots that have been made after the cutting back process has been performed; once will be sufficient. Staking and supporting the shoots I must leave to the ingenuity of each cultivator.

HANGING PLANTS.

I have hitherto alluded only to plants grown on the window ledge; but what looks more lovely than a plant suspended from a small rustic basket in the centre of the upper part of the window? It interferes with nothing and nothing interferes with it; there's an element of beauty in that simple fact. Plants, which have slender branches, which naturally hang down, are at home in this situation. The "Mother of Thousands"—the "Wandering Jew" with its pretty marked leaves—the "Lobelias," and some of the trailing "Campanulas or Bell Flowers"—the well-named "Rat-tailed Cactus," and the so-called "Ice Plants," are all more at home when suspended than when grown in any other position, unless it may be when placed on brackets at each side of the window, where they have a very charming appearance. I would suggest that the suspended basket or flower-pot should be supported by a piece of cord passed through a small pulley, by which means it will be easily lowered down for the purpose of watering, and also during nights, for reasons which I before gave, and which are specially applicable to such plants as these.

OTHER PLANTS FOR WINDOW CULTURE.

It remains only for me to say a few words as to what other plants are adapted for window culture. In doing this I would address my remarks not only to the artisan or cottager, but to all possessors of a garden with its conservatory and greenhouses. As the latter stroll leisurely through their more or less extensive establishments, and derive that pure enjoyment which the contemplation of nature's handiwork is capable of giving, is it asking too much if they are entreated to assist, by something more than a subscription or a donation of money, in furthering the objects of the window gardening movement?—a movement the aim of which is to foster and encourage a taste that cannot fail to elevate the moral character of those in whom it is once engrafted. No one who has been brought into contact with the persons who cultivate plants in their windows, and who has had the opportunity which those interested in this movement have had, of appreciating the intense affection with which plants are cherished by their owners, but must feel it a pleasure and a privilege to aid in the development and culture of that pure and healthy enjoyment which springs from the love of flowers.

Let me now briefly point out more directly how those who possess the means have the power to assist. A few years ago, and for three successive seasons, an important part of the funds of the Hull Window

Garden Society was devoted to the distribution of those plants which had done duty, during the summer and autumn, in the flower gardens in and adjacent to Hull. These plants were carefully potted and distributed, but as a general rule they were not given until after the frost had not only tarnished their beauty but seriously affected their vitality. Can the result be considered satisfactory, when out of every four plants so obtained and distributed, perhaps but one lived to present its thank offering of flowers, in return for the care and attention bestowed on the whole four through a long winter? In many instances not even one survived. The suggestion that I would venture to offer then is this: that those who have facilities would ask their gardeners to prepare a few plants specially for distribution (I will name the most desirable plants presently), and grow them in what are known as four-inch pots. Plants thus grown, and well matured in the autumn with free exposure to the sun, would be so valuable for window culture that, judging by my own experience, I would rather have one plant thus prepared than half-a-dozen of the plants taken up out of the flower garden. Does your gardener object to aid in this good work, on the plea that it involves for him extra labour! I trust not; for were it so, I should blush for the honour of the profession to which I belong. No! the lover of plants, if he be a true lover, will rise superior to a narrow-minded objection such as this, and will be only too ready to assist, by all possible means, all those who have a love for flowers within them, and not only that, but to call that love into active existence where, from want of opportunity, it has hitherto lain torpid and undeveloped. There is yet ample time before the autumn, and I feel sure the appeal made will not be made in vain.

A word now to the recipients. While rejoicing in the success which will attend the distribution of plants such as I describe, let them remember the feeling with which I have asked the donors to contribute, and let them reciprocate that feeling. Be not unthankful to those who have placed you in a position to appreciate and admire more fully than you have hitherto done the glorious works of the Almighty; and rely on it plants given and received in this kindly communion of feeling will furnish many a useful and pleasant page in your life's history.

It remains but to enumerate such plants as are best adapted for window culture. I have already named those which, by their mode of growth, are suitable for suspended baskets; to these I would only add *Isolepis gracilis*, *Gazania*, and *Ivy-leaved Geraniums*, and *Ivy* itself. The others are as follows:—*Pelargoniums*, scarlet and other varieties, variegated, golden, and silver; *Petunias*, *Fuchsias*, *Cupneas*, *Echeverias*, *Aloes*, *Cacti*, *Vallota purpurea* (*Scarboro' Lily*), *Pteris serrulata*, *Hydrangeas*, *Plectranthas* (*nettle-leaved Geranium*), *Chinese Primrose*, *Calceolarias*, and *Cinerarias*.

GARDENING IN BELGIUM.

ON my first visit to Belgium in the spring, I was much struck with the universal love of flowers and window gardens which is noticeable there. The flowers in the markets are cheap and abundant. The railway journey through orchards in full blossom, bright green fields and patches of yellow colza, was refreshing; and the quiet, peaceful look of the Bruges streets was rendered still pleasanter by groups of gay flowers in most of the low narrow windows. A window of a quaint shape had a light blue-green frame and embroidered muslin curtains, a blind half-drawn down of thin embroidered muslin, with another blind to draw over it just appearing, and made of green and white striped stuff with a fringe, of striped holland, all as clean as possible, and on the window seat two or three azaleas, a small palm, and two glass pots with bright green rye grass grown in cotton wool. The grass looked very fresh and spring-like, and relieved the bright colours of the azaleas. The best houses had splendid banks of flowers raised within their windows; arums and azaleas were the favourites, and there were small shrubs of *laurustinus* trained into standards and covered with blossom. These had a very good effect. In the street leading to our hotel was an entrance to a brewery, but it looked more like an entrance to something between a conservatory and a museum. Great pots of flowers and ferns stood all round, rich masses of colour; numbers of stuffed birds, mostly white ones, were perched about above them; a small aquarium and two or three cages of live canaries and waxbills stood amongst the flowers. The chemists at Bruges appeared to amuse themselves with growing rye grass. I saw one or two chemist's shops with little else in the windows besides this, and some pots of flowers. Yellow wallflowers (double) were favourites, and beautiful spiraeas and mignonettes—a considerably prettier sight, if not so professional, than the red and blue jars in our shops at home. We wandered all about the smaller streets; and in the windows of the poorest-looking houses, and smallest, most miscellaneous shops, we noticed flowers. Forget-me-nots were sometimes to be seen grown in what looked like deep dishes in the window. The canals at Bruges are some of its pleasantest characteristics, the quaint mediæval houses coming straight down into the water, or having little gardens with high walls, and poplars just coming into that rich gold colour which the early leaves show. The trees come in just at all the right picturesque

corners, among red-tiled roofs, and lie reflected in the smooth canal. Lilacs were just in blossom, and every little corner by the low arched bridges that had collected a little mould had a group of iris leaves cropping up into a brilliant bit of green to enliven the old grey walls. I went in to only one garden. From the top of the helfry at Bruges, my eye fell upon a little enclosed and cultivated strip in the midst of the city, and in the course of the day, while visiting l'Hôpital de St. Jean, I recognised the trim little garden as belonging to it, as having an array of beautiful standard bay trees in tubs. We afterwards saw carts full of similar bay trees going through Bruges, and on our way to Ghent passed our friends waiting in their railway truck. Evidently Bruges is expert at their manufacture; they looked very much like orange trees, and were very effective. At Ghent we found the same love of flowers, but not so much among the shops and small houses. The best houses had beautiful bouquets laid out on the cushions of the window seats, and sometimes real flower shows piled up inside the windows.

THE FLOWER MARKET.

Sunday morning brought its treat of flowers to all in Ghent. The first thing I heard when I woke was our maid telling me "the flower market is begun; we should get up and see it." L'Hôtel Royale looks out on the Place d'Armes, a fine open square, surrounded entirely with lime trees. I came into our sitting-room; the tall windows into our balcony were open. Summer seemed suddenly to have come upon us; outside the lime trees rustled, the sun shone, and a hum and tramp of people sounded happily beneath us. There seemed to be very little real business, so as to make one think the Sunday disregarded, but a general innocent enjoyment of the little hand trucks full of roots, pots of flowers, and trays of seeds. The trucks kept in a line under the trees all round the square. The buyers or admirers loitered on each side of them in a holiday sort of way. In the middle of the square children in blue pinafores played, and their elders strolled up and down. We descended into the midst of this pretty flower market to try and get a bouquet. On the staircase I found two or three chambermaids with a great bunch of forget-me-nots from the market. They stopped me to see them, and insisted on my accepting half the bunch, telling me the name in Flemish. In the market were the nice clean market women in Sunday caps, and men in blue blouses. The language was a difficulty. I saw a nice little collection of alpine plants, sedums, and echeverias. I purchased a pretty dark-red plant I had not seen before, that grew up on its stalk like a miniature palm. My Flemish flower boy called it an "echéveria," and a variegated sedum he called "sempervivum." Sempervivum californicum was there, and a good variety of little alpinas. One very favourite plant is an ox-eye daisy, grown in nice little round patches, with long stems, and blossoms standing out all over it. There were numbers of these plants on the Ghent window seats. There were not many bouquets in the market, but the prettiest things were the hanging baskets. There were no flowers in them, but beautiful luxuriant grasses, and the healthiest young creepers I ever saw. Some were arranged with great taste in large shallow cups of red pottery, and the trailing leaves and tendrils of various kinds and shades of bright green made a charming piece of colouring. These latter only cost a franc and a half, and looked well established and healthy. We longed to carry one off with us, but they would have been difficult to manage during our journey; they seemed immensely popular, and were sold off in no time. Great pots of basil were very much the fashion, small palms, white heaths, and numbers of little rose bushes. The hard working dogs lay under the little carts which the poor creatures pull so valiantly, but look out of breath, and make one feel very much for their poor soft feet on these roughly-paved streets. Wallflowers are cultivated very much in pots, particularly yellow ones and the purple kinds, which are grown to a considerable height.

I saw a pretty specimen of gardening at the old Abbey of St. Baron. We drove to see the famous ruins, which are all in a small space, inclosing with arches and ruined walls a little plot of ground. An old man took us in and explained the antiquities, but after a little survey we began to notice the care with which everything was kept. A great plant of acanthus grew in a picturesque corner against half-decayed mouldings and crumbling stones, and a fine bush of rhubarb (grown here for ornament). The little plot of ground had been a dismal wilderness when our friend came to take charge of the ruins, but in the intervals of showing them he had made a charming flower and kitchen garden out of the space they inclosed. His fruit trees were in blossom, and added very much to the appearance of the Abbey, and his neat borders of pink daisies did not take from its picturesqueness. The old walls themselves were gilded up to the highest stones with yellow wallflowers.—*M. A. D.*

Ar-Nut.—This is the *Bunium bulbocastanum*, a root which has a great variety of names, Hawk-nut, Kipper-nut, Pig-nut, Earth-nut, and Ground-nut, besides the Scotch name, properly written, I believe, Arnot. It is called in Burgundy Arnotta, whence probably the Scotch name. It has also the Latin names of *Agriocastanum*, *Nucula terrestris*, and *Bulbocastanum*. The Germans call it Erdnuss. It is found almost everywhere, in woods and grassy places; and is known by its slender stem, leaves like those of wild parsley, with white flowers at the top. It is not easy, however, to secure the root, as that part of the stem in the ground is very slender, and liable to break off, leaving the digger but a poor chance of finding the root, which is pretty deep in the earth, and the clue to which is lost when the stem breaks. The nut is nearly as large as a nutmeg, and has a brown coating, which easily peels off and encloses a yellowish nut, the flavour of which is rather sweet, but at the same time pungent, and not very pleasant.—*Notes and Queries.*

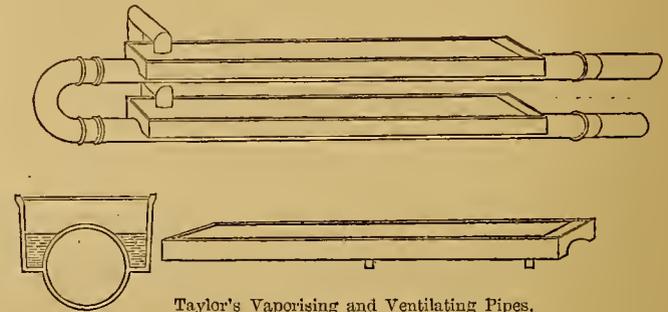
GARDEN STRUCTURES.

MESSRS. HOWITT'S PRIZE HOUSE.

WE purpose from time to time illustrating garden structures that present any novel features, not necessarily to recommend them as the best of their kind, but simply because, in the interest of knowledge, it is desirable that the horticultural public should know something of the aspect and peculiarities of such structures.

Our illustrations this week show the elevation and details of Messrs. Howitt's house, drawn by our special artist at the Birmingham show.

The house shown at Birmingham was thirty feet long by seventeen feet wide, heated with Taylor's patent combined warming, ventilating, and vapourising pipes. The house is constructed on a patent system. The rib, or roof truss, is

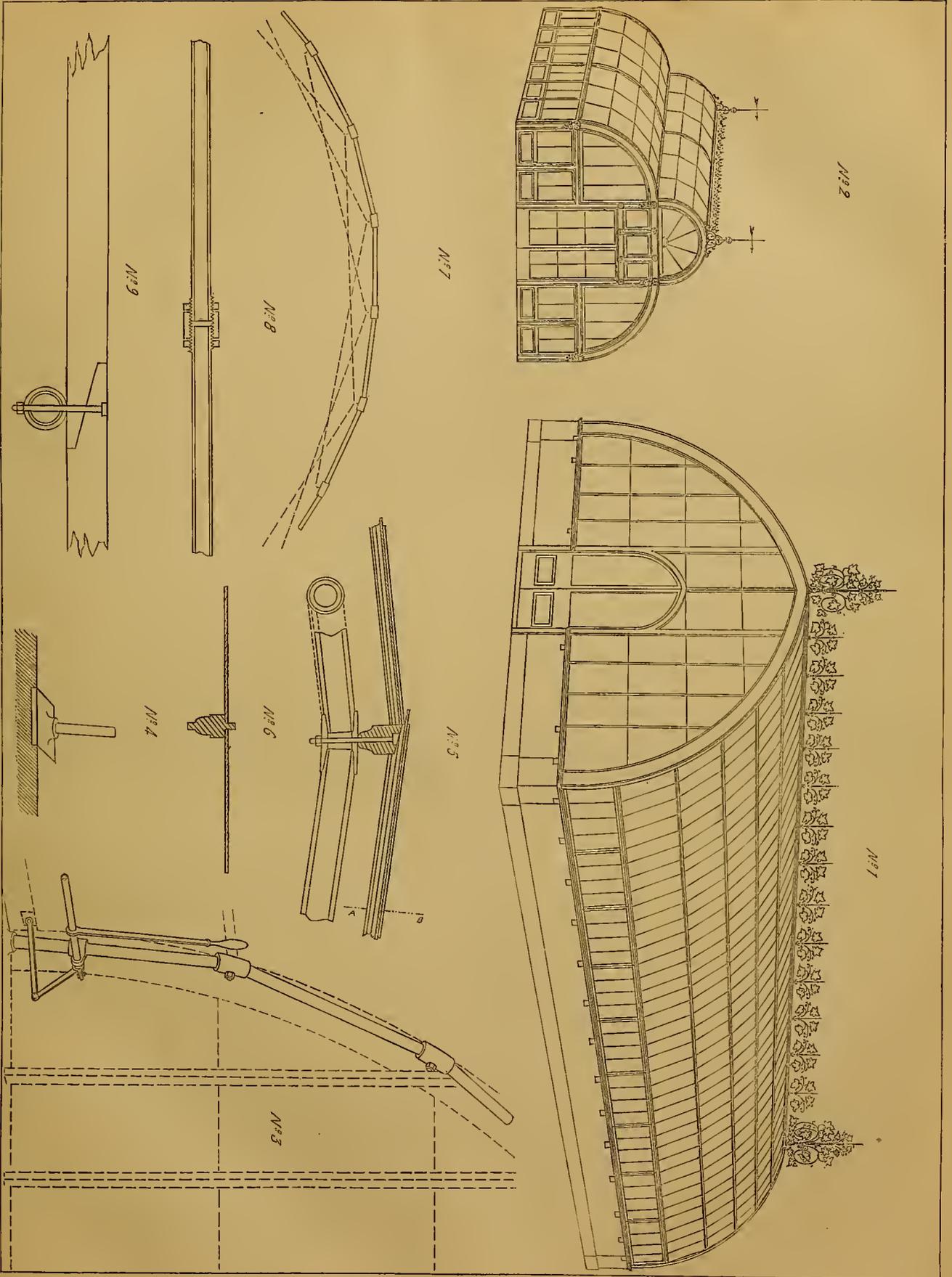


Taylor's Vaporising and Ventilating Pipes.

formed of twelve (more or less according to the size of the house) lengths of straight wrought-iron pipe, $1\frac{1}{2}$ inch in diameter (according to span of roof), jointed together by means of very strong wrought-iron sockets, bored at an angle requisite to give the necessary curve to the roof. This rib or truss being free from outward thrust requires no cross tie-rods, so that an uninterrupted headway is preserved. The inventors claim in their notes handed to the judges, "that the extreme lightness and great strength of this rib specially adapt it for use in the construction of horticultural buildings, where symmetry of form and beauty of design, combined with a minimum amount of sunshade, are of paramount importance. They have constructed this house with part iron and part wood sashes, so that the public may individually choose which they would prefer. The sections of tubular, rib, or roof truss are socketed, not screwed together, and are made so that any pipe will fit any socket, and all the other parts of the house are screwed and bolted together, so that it is claimed as a great advantage that the house may be taken to pieces and re-erected at pleasure. The glazing is so arranged that any condensed water in the inner side of the uppermost series of panes percolates on to the outer side of the next series of panes, and so on to the bottom, thus avoiding all 'drip' into the house. Another advantage is that the expense of glazing a house of this kind is no greater than that of a rectilinear structure, straight glass alone being used. They propose to use in their houses Taylor's patent combined, warming, ventilating, and vapourising pipes.

"The special feature of this patent is the introduction of the outer air through a partially closed chamber or trough, on the top of the hot-water pipes; when this chamber is half filled with water, a pure, genial, and warm climate is produced. A constant change of air is obtained without opening the sashes. The exit of the air takes place at the top, where a shaft or aperture is made for the purpose."

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| No. 1. Prize Conservatory. | No. 6. Section through glazing bar. |
| " 2. Conservatory and Aviary combined, erected at Chiltern House, Gravesend. | " 7. Patent Rib, trussed and tied for spans over thirty feet. |
| " 3. Patent Tubular Rib, showing method of opening side sashes. | " 8. Longitudinal section of Pipe and Joint of Tube for opening entire length of sashes. |
| " 4. Footstep of Rib in Cast Iron. | " 9. Transverse Section through Rib at Socket-joint, showing method of fixing Purlines. |
| " 5. Longitudinal Section of Rib, with Parline attached, showing method of glazing. | |



THE PRIZE HOthouse AT BIRMINGHAM.

OUR FRUIT CROPS.

SOUTH EASTERN DIVISION.

Cliveden, near Maidenhead, Berkshire.—All outdoor crops in this neighbourhood are a failure through late spring frosts. To this statement there is, as far as I know, no exception.—J. FLEMING.

Chevening Place, Sevenoaks, Kent.—Apples are a failure, as are also Apricots. Peaches half a crop; Pears good; Currants half a crop; Gooseberries good; Strawberries and Raspberries half a crop; Plums good; Cherries half a crop; Walnuts a failure; Filberts half a crop.—D. COE.

Eridge Castle, Tunbridge Wells, Kent.—Of Apricots we have none. Peaches half a crop; best where sheltered. Pears on walls, a fine crop. Plums, a few on walls; standards, none. Apples, very scarce; King of the Pippins, Winter Queening, and Keswick Codlin, pretty good. Cherries, not quite a full crop. Strawberries, fine. Raspberries, excellent. Gooseberries, not a full crop. Currants, half a crop. Nuts, scarce. Figs, a full crop. There was a capital show of blossom, but late spring frosts did the mischief.—J. RUSK.

Portnal Park, Staines, Surrey.—Outdoor fruits have suffered severely from spring frosts. Peach and Nectarine trees in some places are very much injured. Late Pears are a failure, but of early sorts I have a good crop. Apples on standards very thin, and on espaliers I have none. Plums very thin, much under average. Of Figs I have a fair sprinkling. Cherries, excellent; and Strawberries, Gooseberries, and Raspberries I have in abundance. Red and white Currants thin, black a heavy crop. Orchards in this neighbourhood, with few exceptions, have failed.—THOS. MAY.

Broadlands, Romsey, Hampshire.—I have a very unsatisfactory return to make for myself and neighbourhood. Strawberries, however, have been good; Pears an average crop; Apricots none; Peaches, none in most places; a fair crop of late ones here; no early ones; Gooseberries and Black Currants, below average; Red and White Currants scarcely any; Raspberries an average crop; Apples, a few Hawthornedens and "Profits" in some places; in others none at all; wild Blackberries are a good crop, and of these we intend to make up our quantum of preserved fruits for winter use.—T. DAWSON.

Albury Park, Guildford, Surrey.—With us Apricots are a complete failure; Apples very few, very much blighted; Pears half a crop, very much deformed and small; Plums very few on walls, none on standards; Cherries very few, trees much blighted; Figs half a crop, trees much improved since hot weather set in; Peaches and Nectarines very few, trees badly infested with aphides; Grapes good, but late; Gooseberries little more than half a crop, but very good; Currants of all sorts very few, scarcely any in this neighbourhood; Raspberries, a very good crop; best we have had for years; Strawberries half a crop, bloom very much cut by late frosts; Filberts and Walnuts both a total failure.—WILLIAM KEMP.

Royal Gardens, Frogmore, Windsor, Berks.—The following is the state of outdoor fruit crops in these gardens, viz.:—Apricots very thin, many trees quite failed. Apples, generally a light crop, with the exception of a few free-bearing varieties, such as Scarlet Russet, Pomona, Frogmore Prolific, Downton Nonpareil, and Small's Admirable. Cherries, generally thin, even including Morellos. Pears, a moderate crop, but they promise to be of good quality. Strawberries, an average crop, but soon over. Peaches, a good crop and looking well. Nectarines also a good crop. Of small fruit, Raspberries are a good crop. Currants, both black and red, are very light; fruit small and thin in the bunch. Filberts, a light crop. Walnuts nearly a total failure. The foregoing will also apply to the neighbourhood of Windsor generally, with the exception of small fruits; of these in spots there are good crops, especially of Currants and Gooseberries, and in a few places the Peach and Nectarine crop is very thin. Altogether the outdoor fruit crop is very light, and much below the average.—J. POWELL.

Coleshill, Highworth, Berks.—Apples, almost a total failure; trees much blighted, many of them past recovery. Apricots also a total failure; while carrying an unusually heavy crop last autumn the trees were attacked by mildew, which injured them so seriously that we had no bloom at all this spring; the trees still look sickly, but are improving since the hot weather set in. Cherries promised to be an immense crop, but frost, during the time the trees were in flower, injured them seriously, and again, at the beginning of June, the frost pinched them hard; a large portion dropped off, and half of those that remained were not fit for table, owing to frost-bite; the result is a very thin crop of inferior fruit. This also applies to early kinds, such as May Duke, &c.; Morellos fine, and a fair crop. Currants of all kinds, red, white, and black, good. Mulberries promising. Gooseberries, not quite so plentiful as usual; fruit very

fine. Peaches, a thin crop, but they promise to be of fine size; trees which have looked sickly are improving under the influence of late hot sunshine. The same remarks apply also to Nectarines, which are, perhaps, a little thinner than the Peaches. Pears, consisting of Jargonelle, Bon Chrétien, and other early kinds, are a good crop, but fine autumn and winter sorts are very thin, and many of them are so much injured by late frosts that they will, I fear, fall off before they ripen. Trees, too, look sickly; they are evidently suffering from the peculiar weather which we had last summer. Of Plums, with the exception of Greengages, we have literally none, and the trees are blighted and half dead. Two years ago fine plums were sold in our neighbourhood at 2s. per bushel. Raspberries were much damaged by frost when in flower; therefore thin and poor. Strawberries, with the exception of Keen's seedling, which suffered from frost more than other kinds, have been good and fine. Walnuts, none; other Nuts, partial.—H. ECKFORD.

SOUTH MIDLAND DIVISION.

Ramsay Abbey, Huntingdonshire.—Generally speaking, stone fruits, such as Peaches, Nectarines, Plums, Apricots, and Cherries are very thin. Several young trees, three or four years planted, that have never been exhausted by over-cropping are, however, carrying a fair crop. Apricot trees are clean and in splendid health, but Peaches and Nectarines have been very much infested with black fly, and have required unceasing attention to keep them clean. Looking at the difference between the crop in the orchard house and the open wall, one is apt to sigh for the time when a supply of all our choice stone fruits may be grown under glass. In regard to Apples, both on dwarfs, in the kitchen garden, and standards in the orchards, many trees are carrying a full crop. Some few have, however, scarcely recovered from the exhausting effects of the heavy crops which they bore two years ago, and are consequently nearly bare. Pears, on the whole, are a fair average crop on walls. Bush fruits and Strawberries have been plentiful and good in spite of the spring frosts. Alpine Strawberries are very full of fruit, and will continue bearing till frost cuts them off. Walnuts and Filberts are very thin. Outdoor Grapes are plentiful, and generally free from mildew, but will in all probability be late in ripening.—E. HOBDAV.

Moorpark, Rickmansworth, Hertfordshire.—Outdoor fruit in this neighbourhood is very much under average, but in some localities may be found a fair sprinkling of certain varieties of Apples; with us the Keswick Codlin and Norfolk Beefing—two good old and useful sorts—are a fair crop; others very thin. Ribston Pippin, Margil, and some of our approved dessert sorts, although having set well, dropped off at a certain stage of their development, caused, I have no doubt, by the cold rains and sharp frosts which we experienced when the trees were in flower; also, after the Apple and Pear crop was set, Pears dropped their fruit, and, with the exception of a few sorts on south walls, such as Marie Louise, Citron des Carmes, &c., it may be said Pears are a failure. Plums and Cherries, which at one time promised to be a heavy crop, ultimately dropped an immense quantity of their fruit in an early stage of its development, so that Plums are not an average crop, and Morello Cherries, usually heavily laden with fruit in former seasons, are this year a lighter crop than I ever remember to have seen them. A new enemy set on our May Duke and other dessert sorts this year, but left untouched some Morellos I had on a south wall. I mean snails, which cleared heavily-laden trees of good flavoured Cherries in a night or two. Apricots, Peaches, and Nectarines, out of doors, are a complete failure here. Out of door Strawberries with us have been a "sight." We are still gathering daily, which, with forced fruit, makes our Strawberry season a long one. Crops of red and black Currants are heavy and good. Gooseberries a fair crop. Walnuts, Cobnuts, and Filberts poor.—D. CUNNINGHAM.

WEST MIDLAND DIVISION.

Alton Towers, Cheadle, Staffordshire.—Strawberries, abundant, but they have suffered much from storms; Gooseberries, half a crop; Currants, thin, destroyed by frost; Pears, very thin; Apples, half a crop; Peaches, outside, excellent in some places; Apricots, none; Cherries, plentiful.—T. RABONE.

Compton Verney, Stratford-on-Avon, Warwickshire.—Apples, a failure; Pears, an average crop; Peaches and Nectarine, the same; Apricots, half a crop; Plums, under average; Morello Cherries, half a crop; Figs, a crop; Walnuts, a few; Strawberries, under average; Raspberries, a good crop; Gooseberries, under average; Currants, poor. The above is the state of the crops in the garden here, and may be taken as a fair representation of the neighbourhood.—G. CRADDOCK.

Keele Hall, Newcastle, Staffordshire.—In this district there is no fruit on Peaches and Nectarines on open walls, and the same may be said of Apricots; Cherries, fair crop; Raspberries, very good; Strawberries, good, but injured by frost in many places; Gooseberries, good; Currants of all sorts, fair. Both these fruits have also been injured by frost in many places. Pears on walls, good; Apples, the greatest failure I ever remember; the trees, too, have suffered so much from caterpillars, that the foliage is very bad.—W. HILL.

Downton Castle, Ludlow, Shropshire.—With us Apples are very scarce; in fact, I shall not have more than a bushel off a very large quantity of trees, and they are much about the same all over Herefordshire. Peaches and Nectarines not so good as usual with me, but still I have a fair crop; in some places, however, about here they have no fruit, and the trees are nearly killed by mildew, gum, and canker. Plums, Apricots, and Cherries not half a crop. Of Pears I have a good crop, both on walls and standards; bush fruit all good, and fine in quality.—WM. LANOON.

Shobden Court, Leominster, Herefordshire.—Of Apricots we have scarcely any, and of Peaches and Nectarines very few; Plums on walls are not an average crop, while on standards there are scarcely any. Of Pears there are very few, and Apples are very scarce in this neighbourhood. The trees bloomed most profusely, but all dropped owing to the long continued cold. Strawberries have been abundant; also Gooseberries and Currants, but late in ripening, as we have had so much rain, with scarcely any sunshine. The last few days have greatly improved the appearance of all kinds of crops.—J. MATTHEWS.

Madresfield Court, Great Malvern, Worcestershire Fruit crops this season are extremely partial, the cold weather of May, and especially the severe frost of the 19th of that month, did much injury to strawberries and bush crops. With me Peaches and Nectarines are very good and clean; Apricots half a crop; Pears and Plums on walls good, on espaliers and pyramids a failure. The earlier kinds of orchard fruit are good; later sorts scarce. Currants and Gooseberries a fair crop here, but by no means generally so. Strawberries, where not injured by frost, have been generally good, but soon over; President and Sir J. Paxton have cropped well, but the most valuable Strawberry I grow is one named Oxonian. This is only just coming into use (July 26th), and will last three to four weeks; a north border suits it better than any other aspect. Nuts, Filberts, and Walnuts quite a failure here.—WILLIAM COX.

Tortworth Court, Wotton-under-Edge, Gloucestershire.—Crops in general have not been so light for many years past as they are this season. Peaches, Apricots, and Plums are almost a complete failure; on Plums, in some few instances where trained against walls, there is a sprinkling. Apples are so scarce, that we shall not, in a three-acre orchard, be able to harvest above two bushels, the varieties being confined principally to the Codlin section; not only did the late frosts destroy the blossom, but the foliage as well, which is just beginning to recover; but I fear the young wood will not ripen properly. The Pear crop is not quite a failure, but it is nearly so. Standard Cherries are a failure. On walls we have one-third of a crop, with the exception of the Morello, which is abundant. Of Raspberries we have half a crop, but the fruit is small. Of black and red Currants there is about half a crop. Figs are a failure; Gooseberries, abundant; Strawberries, one-fourth of a crop; Nuts, abundant. Many in this neighbourhood have lost both Apricot and Peach trees. Farm orchards are barren, therefore Cider will be scarce.—ALEXANDER CRAMB.

Packington Hall, Coventry.—Our Apricots are about half a crop, which is by no means general, as in most gardens round here there are none. Peaches and Nectarines, with me, a quarter of a crop; in most gardens, however, there are none. With the exception of Royal George and Grosse Mignonne Peaches, my other Peach and Nectarine trees are in fine health, but these two sorts are much infested with mildew, which shows that they are of a more tender constitution than most other varieties used for outdoor work; this, too, is not the first time that I have watched their tendency to become diseased when the season has happened to be ungenial. Plums on west aspect walls, a fine crop; on east aspect or north, none; which may be accounted for by the fact that east and north aspects do not receive the same amount of sun as a west wall. In very few gardens, however, round here are there any Plums. Pears, on all aspects on walls and standards, with me are a fine crop; but in many other gardens they are very thin. Apples, with rare exceptions, are a total failure, both in orchards and gardens. Cherries, Quinces, Medlars, Filberts, and Walnuts, are all bad; even Morellos are mostly a failure. Here all bush fruits, such as Currants, black, white, and red, are very thin, as well as Gooseberries and Raspberries; Currants on a north wall are, however, fine. Straw-

berries are a failure, and such is the rule in this district, caused undoubtedly by the frosts which we had on the nights 26th, 27th, and 28th of May, when the Apples were in full flower; the Pears, being more forward and covered with leaves, especially on walls, escaped. Blight is everywhere abundant, caused doubtless by cold and wet in May.—J. G. TEMPLE.

NORTH MIDLAND DIVISION.

Berry Hill, Mansfield, Notts.—Apricots, a failure, plenty of bloom, but it was entirely cut off by spring frosts; Peaches, a very poor crop; Plums, a good crop, especially on walls; Figs, none grown outside; Cherries, a good crop; Apples, a fair crop; Pears, a moderate crop (there was abundance of bloom, but it got entirely destroyed by frost); Gooseberries, a good crop; Currants, abundant; Strawberries, very good, but flavour poor owing to the heavy rains; Raspberries, very good; Damsons, quite a failure; Walnuts, very few; Filberts, a poor crop.—S. A. WOODS.

Sudbrooke Holme, Lincolnshire.—Apples, a thin crop, Pears, half a crop, Plums, a fair crop, Apricots and Peaches, very thin. All bush fruit and Strawberries, a good crop, but the Strawberries have been much spoiled by heavy rains. Trees very healthy and free from blight. In this neighbourhood Apple orchards are producing a fair crop, where sheltered from north-east winds. Plums and other fruits partial. Cherries are a fair crop, but spoiled by the rains. The loss of our fruit crops must be attributed to the wood being badly ripened last autumn, and to the low temperature this spring.—GEORGE MCBRY.

Exton Park, Oakham, Rutland.—Apple and Pear trees never looked more promising than they did this spring; but a cold May, with much rain and frosty nights succeeded by a few hours, very hot sunshine, seemed to burn them all black. The failure, I think, is general in this neighbourhood. Apples and Pears are very scarce; Peaches and Apricots are a failure; of Nectarines we have a few; Figs a small crop; Filberts and Quinces, none; Walnuts, thin crop; Small fruits, good; Strawberries, very fine and large; President, Lucas, Sir C. Napier, and Elton Pine have been the best here. Cherries, a grand crop. Morellos are now nearly as large as good-sized Gooseberries.—J. SMITH.

Coleorton Hall, Ashby-de-la-Zouch, Leicestershire.—In spring, I never saw such a prospect of a great crop of fruit. But the severe frosts in April cut off even the Apple buds long before they could expand. At present our crops stand as follows:—Apricots none; Apples scarcely any; Morello Cherries on walls, plentiful; all other sorts a failure; Plums on walls half a crop; on standards a complete failure; Peaches and Nectarines very few, next to none; Pears on walls half a crop; on standards scarcely any; Figs very few; Currants of all kinds a fair crop; Gooseberries half a crop; Raspberries, a good crop and fine; Strawberries, President and Wonderful pretty good; very few of other kinds; Walnuts and Filberts a failure. The failure of fruit crops in our immediate neighbourhood is general.—M. HENDERSON.

Osmaston Manor, Derby.—The following remarks concerning pears apply to trees trained on walls with east, west, and south aspects: Althorp Crassane and Beurré d'Areberg, fine crops; Williams's Bon Chrétien, Doyenné d'Été, Easter Beurré and Beurré Diel, good crops; Ne Plus Meuris, Louise Bonne of Jersey, Délices d'Hardenpont, and Summer Frauc Réal, moderate crops; Marie Louise and Jargonelle, thin; Chaumontelle, poor, and the same may be said of Passe Colmar, Beurré Rance, Thompson's, Glou Morçean, and Knight's Monarch. Beurré Rance has never missed before during ten years. Pears altogether are very irregular, some trees being loaded, whilst others close at hand have little or no fruit on them. Gooseberries abundant, only slightly hurt by spring frosts; Red Currants, moderate; Black Currants, scarcely any; Raspberries, a good crop; Strawberries, also a good crop, but much damaged by rain; Plums and Apricots, very scarce; Cherries, a fair crop, but a good deal cracked owing to the long-continued wet; Apples, a poor crop (none on tall standards). Peaches and Nectarines are not grown out of doors here.—F. HARRISON.

Bloxholm Hall, Sleaford, Lincolnshire.—Apples in this neighbourhood are a very deficient crop; trees much blighted by late spring frosts; Pears on walls a fair crop, but on standards, in exposed parts, very deficient; Plums on standards a complete failure, a fair sprinkling on walls; Apricots on walls a fair crop, where protected, but where unprotected, on the same wall and situation, they have been destroyed by late spring frosts; Strawberries, an excellent crop, and very fine in quality, but their season was of short duration; owing to constant drenching rains when in full bearing, they rotted by wholesale on the ground; Cherries on walls a fair crop, on standards a failure; many of the Cherries have cracked, owing to the excessive rainfall in July; Peaches and Nectarines poor, trees,

much blighted in many parts; Figs a fair crop; Raspberries abundant, and of excellent quality; Gooseberries very good; Red Currants under average, bushes much blighted; Black Currants also under average, but good in quality; White Currants a fair crop of fine fruit; Walnuts promised to be good early in the season, but they have fallen off during the summer, and now only a very poor crop will be gathered; Filberts also very poor. Altogether outdoor fruits are not encouraging, although we had an abundance of strong and healthy bloom. Fruit trees generally were early in flower, owing to the mildness of the winter, but they suffered greatly from severe spring frosts.—DAVID LUMSDEN.

SOUTH-WESTERN DIVISION.

Sherborne Castle, Dorset.—Fruit crops in this garden and the neighbourhood run nearly as follows:—Apples almost a failure; Apricots quite a failure; Cherries a very middling crop; Red and White Currants very scarce; Black Currants plentiful; Figs a moderate crop; Gooseberries, in most parts, very plentiful; Medlars very few; Mulberries good; Nuts of all sorts very scarce; Peaches and Nectarines also very scarce; Pears, a sprinkling on walls, very few on pyramids; Plums almost a complete failure; Quinces a few; Raspberries a very fair crop; Strawberries plentiful.—W. G. PRAGNELL.

Ennys, Penryn, Cornwall.—Apple orchards gave early promise of a good crop. The blossom was not so thick as it sometimes has been, but it was strong and perfect; yet the crop was doomed. Several degrees of frost destroyed all hope. There is, however, a sprinkling in some few sheltered places, but no crop anywhere, as far as I can learn. Of Pears there is a better report, especially of early and autumn kinds. Peaches and Nectarines are far below the average; some places not half a crop, others much less than that. Plums a poor crop. Raspberries plentiful. Bush fruit the poorest crop known for years past. Strawberries, good crops. Cherries below the average.—HENRY MILLS.

Nettlecombe, Taunton, Somersetshire.—The following is the state of the fruit crop at Nettlecombe, and, I believe, it is much the same in this neighbourhood generally:—Of Apricots we have scarcely any; Peaches and Nectarines none, trees much injured by frost in May, accompanied by cold winds, rain, hail, and snow. Cherries about half a crop. Pears about two-thirds of an average. Apples, scarcely any; trees much injured. Plums none. Medlars none; trees much injured. White and Red Currants, scarcely any. Black Currants, average crop. Gooseberries, very plentiful. Raspberries, two-thirds of a crop. Strawberries, about half of an average crop, but small. Quinces, none. Walnuts, very few, the male catkins having been killed by frost before the pollen was formed. Filberts, none, owing to the same cause. Kent Cob Nuts, very few. Figs, about half a crop. The destruction of our fruit crops is doubtless owing to the trees having been excited by the mildness of the weather throughout January, February, and the beginning of March; then from about the twentieth of March we had almost continually cold rains and high winds, with heavy hail and snowstorms, and but very little sunshine up to the second week of June. I am, therefore, rather surprised that we have any fruit at all.—CHARLES ELWORTHY.

NORTH-WESTERN DIVISION.

Doddington Park, Nantwich, Cheshire.—The frost on the 19th and 20th of May destroyed most of our bush fruits; Apples and Plums are a complete failure; wall fruits thin; Apricots, none. Pears on walls, very good; Raspberries and Strawberries, good.—D. F. SELWAY.

Worsley Hall, Manchester.—Owing to the garden here being situated on the borders of Chat Moss, spring frosts have almost ruined our outdoor fruit crops. So lately as June 7th we had a sharp frost, leaving the eaves of the hothouses covered with ice and the grass quite white with hoar frost. Standard Plum trees have suffered most, being in some cases quite denuded of foliage. We have no Plums at all. Apples bloomed gloriously; but they, too, had to succumb to the relentless frost-laden north wind. Small fruits, with the exception of Black Currants, which are all but a failure, about half a crop. A few young Peach trees, all we have out of doors, have been almost killed, all their first growth being cut off. Pears, a very thin crop, though not so bad as Apples. Jargonelles on the whole are carrying fair crops. Strawberries were a good crop, but more than half of them have rotted on the plants, owing to the excessive wet weather which we have had. Morello Cherries very good; of other sorts few are grown. Altogether the fruit crops are as unsatisfactory as I have ever known them to be.—W. B. URBORN.

EASTERN DIVISION.

Audley End, Saffron Walden, Essex.—Fruit crops in this neighbourhood are very short indeed. Apples very scarce, in fact, not a quarter of a crop; Pears a few; Plums almost none; Apricots a very few; Peaches and Nectarines very scarce; Cherries a few; Morellos, Gooseberries, and Currants not a quarter of a crop; Figs a middling crop; Strawberries and Raspberries are the only kinds of fruits of which I had a crop. Indeed, this is one of the worst seasons I have ever known for fruit.—GEO. YOUNG.

Cossey Park, Norwich.—Wall fruits, a failure—not one dozen Peaches or Apricots on the trees. The warm weather in February caused the blossoms to open, and they got blighted by the severe frost and snow of March, which also injured Gooseberries and Currants. In Norwich Market these used to fetch about a penny a pint, but this season they have brought 2½d. and even 3d., while good Raspberries realise 4d. a pint. Such high prices were never heard of in Norwich before. Plums on walls are scarce, and there are none on standards. Cherries were a bad crop. I have a sprinkling of Apples and Pears, but many of my neighbours have none; in fact their trees were so blighted by the cold weather in May that it will be long before they recover.—J. WIGHTON.

Hardwicke House, Bury St. Edmunds.—This, on the whole, is a sorry season for fruits. Spring frosts and hailstorms in May wrecked thousands of fair prospects. Now and then, however, good crops of Peaches, Nectarines, Apricots, and Plums, delight our eyes. Crops of Apples and Pears are less rare. For months these seemed to have escaped the weather; the fruit clung to the trees though a good deal bruised, and looked much better than the leaves, so ragged and torn; but presently the fruit stood still, anon it seemed to look sick, faint, and down it dropped. I have seldom seen so many Apples fall prematurely. Still upon the whole we shall probably average one-third of a crop of Apples and half a crop of Pears. The latter are, however, very spotty on pyramids, and even on walls. In many gardens a clean sweep has been made of Currants and Gooseberries. I, however, have had an extraordinary crop of the latter and a fair share of the former. Raspberries and Cherries have likewise been plentiful, the former especially so, the latter more exceptional. Strawberries plentiful and good, though everdone with water.—D. T. FISH.

NORTHERN DIVISION.

Thorpe Perrow, Bedale, Yorkshire.—Apples almost a failure; Apricots, a very partial crop; bush fruits, good generally; Peaches, a moderate crop; summer Pears good, winter sorts partial; Strawberries, good, but mostly spoilt by rain; Nuts, bad.—WILLIAM CULVERWELL.

Alnwick Castle, Northumberland.—Fruit trees here bloomed abundantly, but owing to bad weather while they were in flower, some sorts are all but a failure. Apples are only about half a crop. Pears an average crop, and the trees are clean and healthy. Plums a fair crop, with the exception of Greengages, of which we have few. Strawberries and all other small fruits abundant. Cherries, with the exception of a few May Dukes on an east wall, almost a failure. Peaches and Nectarines very scarce, trees clean and healthy. Apricots an average crop, and trees in good condition. Figs medium crop.—A. INGRAM.

Bretton Park, Wakefield.—All kinds of small fruit are very plentiful here; but all the gardens situated in low, wet, and exposed places have suffered much from the frost on the 19th and 20th of May, and have but a thin crop. Strawberries have been unusually large this season; but a great part of them was spoiled by the heavy rains which we had last week, rotting them before they began to colour. Apples and Pears are rather scarce all round this district; the only kinds of Apples of which there is a full crop are Keswick Codlin, Hawthornden, and Emperor Alexander; trees of the late-keeping sorts have scarcely a fruit on them. Peaches and Apricots are quite a failure; all other stone fruits scarce. Figs look promising. Fruit trees of all kinds have been much infested with insects and mildew.—G. CLIFTON.

Southend, Darlington.—Strawberries have been good, and large quantities gathered, notwithstanding the heavy thunderstorms and rains to which the crop has been exposed. Gooseberries and Currants are a fair crop, and free from fly and honey-dew, from which in some years we suffer to a great extent. Apricots not a full crop; indeed in many gardens they are a failure, and only upon a few trees in some favoured locality have I seen fruit. Plums better, but still a partial crop. In the gardens here some trees are good beyond the average; but many—very many—of our best trees have no fruit on them. What I have just said respecting Plums, may

also be said of Pears and Apples; and close-pruned trees, such as espaliers, bushes, and pyramids, are much worse than standards or orchard trees. Bloom at the proper season there was in abundance, but it did not set well. With us Peaches and Nectarines are not to be depended upon, except under a glass cover, and there the crop is excellent; indeed it never fails.—JOHN RICHARDSON.

Stourton Park, Knaresborough, Yorkshire.—The demand for fruit in the market, and the prices obtained for it there, are very good criterions of the state of the crops. In 1870 crops of all kinds were abundant, and prices were low. Last year the crops of some kinds, such as Peaches, Nectarines, Plums, Cherries, and Apples, were light in this neighbourhood, and prices were in consequence high. This year crops of all kinds of fruit are, in general, very light, though there are some places where some kinds are good. Apricots are very thin in most places; the crops in 1870 were very heavy, so that people did not expect a heavy crop this season. The trees had not much blossom on them this spring, and the little there was, being weak, dropped off without setting. Peaches and Nectarines are in general thin; on trees that made strong wood which did not get well ripened there is very little fruit, but on trees that made weaker growth, which got well matured, there is plenty. On some trees here there is a heavy crop; whilst others have few or none. Some kinds of Plums on walls are good, but on standards and dwarfs the crops are very light. Victoria and Golden Drop are good crops; and Greengage, Jefferson, Goliath, and others are moderate crops in some gardens on walls, but on standards in general the crops are very light; the trees have also suffered much from aphides. Pears are in general a moderate crop. Jargonelles on walls in some places are good, and in others rather light; on standards the crops are in general light; altogether the Pears will be much below an average crop. Apples are everywhere very thin. There was a fine show of blossom, and there was every appearance of a heavy crop until the 19th and 20th of May, when the frosts on these mornings dealt out sad destruction to the Apple crop. The Cockpit, a sort grown much in this neighbourhood, appears to have withstood the frost tolerably well. A large old tree of Early Juneating has also a fine crop. Hawthornden, King of the Pippins, White Astrachan, and some others have a fair sprinkling of fruit, but many others have very few; altogether I consider the Apple crop this season as bad as any we have had for some years. Strawberries have been a fair crop in some places; but in others they appear to have suffered from the weather. Here the crop, with the exception of British Queen, which promised well, but did not set well, was a good one. Bush fruits of all kinds here are a fair crop, but Red Currants and Raspberries are not so good as we have had them. I believe bush fruit in general is rather below the average in this neighbourhood. The prices in the markets are nearly double what they were in 1870, and the quality of the fruit much inferior. Altogether the fruit crops in this neighbourhood are very deficient, and will be a sad loss to the populations of our large towns, whose consumption of fruit is something wonderful, the loss of Apples especially will be much felt. The quantity of foreign fruit that comes into our markets is very great, and helps to keep down the prices, and when our own crops are good, this brings fruit within the reach of working men, but when our own crops are failures, the prices in general rise too high to be within their reach.—M. SAUL.

NOTES AND-QUESTIONS ON THE FRUIT GARDEN.

The Pear Grafted on the Quince.—All cultivators know how difficult it is to make some varieties of the Pear succeed on the Quince. M. Carrière has lately pointed out an easy road to success in this matter, namely: always to operate by cleft-grafting, instead of by budding. By this means, in the case of those varieties which exhibit a reluctance to unite with the stock, the disastrous effects of high winds are avoided, and the union of the scion with the stock is secured sooner and more permanently.

Wash for Fruit Trees.—Last year an experienced fruit-grower, the owner of a fine orchard near Niagara river, western New York, wrote us that, in the care of his trees he had practised one simple method with eminent success. He takes lye from leached ashes, mixes a little grease with it, heats quite warm, and, with a syringe, throws it up into all parts of the trees, branches, and trunk. It will effectually kill all kinds of caterpillars, and all kinds of worms that are either infesting the trees in nests or running over the bark. Trees treated in this manner were exceedingly healthy, beautiful, and vigorous in appearance, possessing a smooth glossy bark, and bore the best apples in the country. The remedy is easy and cheap.—*Horticulturist.*

The Strawberries of Monrepos.—It may not be without interest to strawberry-growers to state that this year, in the celebrated gardens of Monrepos, near Geisenheim, large quantities of strawberries, each 1½ oz. in weight (and some of 4 oz. to 4½ oz.), have been gathered. These giants occur chiefly amongst the following kinds: Ambrosia, la Constante, Duc de Malakoff, Sir Charles Napier, and Wonderful. In all the gardens of Monrepos the strawberry-beds are covered in autumn with short stable-dung, and in spring, after the ground has been stirred up, with a layer of tan. Tan is also employed as a mulching over the roots of fruit trees, in order to prevent the rapid drying up of the soil in the months of June, July, and August, to secure an equable temperature, and to drive away vermin. It appears that the smell of tan is peculiarly offensive to insects.

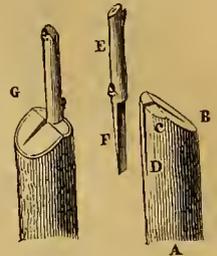
THE PROPAGATOR.

THE ART OF GRAFTING.

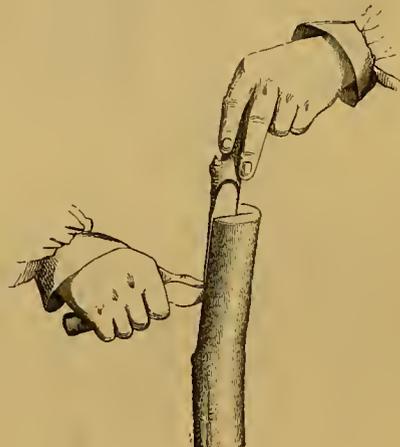
(Continued from p. 26.)

ORDINARY CLEFT-GRAFTING.

WITH A SINGLE SCION.—We have at our disposal a stock (A) of medium size. We cut it obliquely at B, the top (c) of the cut being smoothed horizontally; then inserting the point of the pruning-knife, or the blade of the grafting-knife, we move it gently backwards and forwards, pressing on it moderately, until a vertical cleft (D) is made about the depth of the slanting cut of the scion. The skill of the grafter is displayed in not splitting the stock right across. Care should be taken that the bark and the first albuminum layers of the stock be divided in the same line as the cleft, and with a clean cut; if they should be divided irregularly, no attempt should be made to smooth down or remove the irregularities of the fracture. When the cleft is about two-thirds completed, we take the scion (E) in our other hand and insert it in the upper part of the orifice, pushing it downwards as the incision opens. The implement is withdrawn when the incision has proceeded so far that the scion can be finally lodged in its position by a push of the hand. The sloping cut (F) of the scion is so placed at G that its bark may coincide with that of the stock



Ordinary Cleft-Grafting with a single scion.



Insertion of the Scion in Cleft-grafting.

without projecting or leaving much of a cavity on the inside if possible. If the stock has a thick bark, we should slightly incline the scion inwards in the cleft, so that the layers of bark and albuminum of both stock and scion may inevitably find some point of contact; for the union is effected by the contact of the generative layers of both parts, and not by the external layers of the bark. Mastic is necessary: bandaging not so much so.

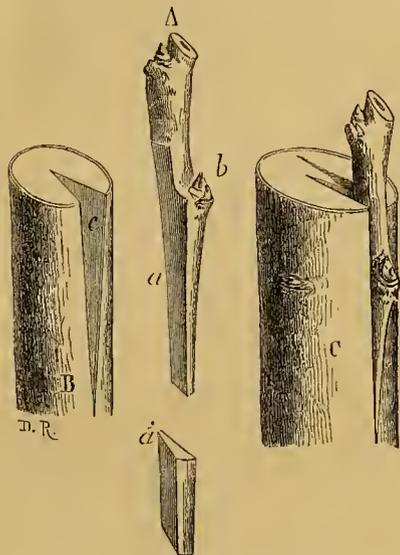
WITH TWO SCIONS.—The stock (A), being larger, will take two scions. The cut (B) is horizontal, and we split the stock right across at C. In order to do this we place the blade of the pruning-knife or the grafting-chisel perpendicularly on the top of the stock, and press upon it with both hands. If the wood is tough, we must make use of a mallet. The scions are placed one by one in the mouth, or in a vessel containing damp moss. When the cleft is two-thirds completed, we withdraw the implement to one side, so as to keep the incision always half-open. We place one scion at the other side, and using the implement or the handle of the mallet as a lever, open the incision so as to let in the scion completely. The insertion of the other scion is not more difficult; perhaps it will



Cleft-grafting with two scions.

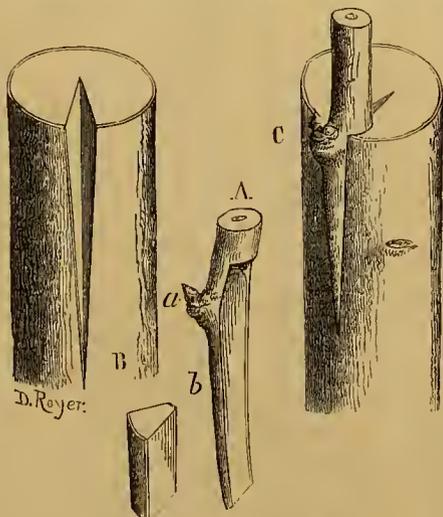
be necessary to introduce the blade of the implement into the cleft (c) at the centre of the cut and open it a little to facilitate the admission of the second scion. If the pressure of the implement should be disagreeable, a little wedge of box-wood might be temporarily introduced into the middle of the cleft (c). This would permit us to insert both scions easily without enlarging the cleft. Bandaging and mastic are necessary.

CLEFT-GRAFTING WITH AN INSERTED BUD.—When more than two scions are to be employed, two parallel clefts are to be made, so as to leave the pith in the centre untouched. A scion may then be inserted in each of the clefts. This might be termed double cleft-grafting, but the method of oblique cleft-grafting is to be preferred. This mode of grafting is based on



Cleft-grafting with an Inserted Bud.

the preparation of the scion. In cutting the scion (A) in the manner of the section (a'), we contrive to have on the back of the cut part (a) a bud (b), which will be inserted in the cleft (c) of the stock (B), as represented at c. From this will spring a vigorous scion, on which the wind will have no effect. It may be tied up against the upper part of the graft. Bandage and apply mastic. Our next illustration shows a scion (A),



Cleft-grafting with a Single Bud.

furnished with a single bud (a), which will be inserted in the cleft of the stock. At b is seen a section of the cut part of the scion; at B the cleft in the stock; and at c the scion finally inserted. Nothing further remains to be done except to apply the mastic, taking care not to rub off or injure the bud (a).

According to the manner in which the end of the scion is cut, the bud (a) may be placed level with the top of the stock, as shown at c, or lower down as at c in the preceding illustration. The incision (B) in the stock shows that this process is equally applicable to grafting by inlaying. By this method valuable scions may be multiplied, since as many grafts may be formed as there are buds.—C. Baltet.

(To be continued.)

THE KITCHEN GARDEN.

PRIZE ESSAY ON THE POTATO.

BY GEORGE MAW, F.S.A., G.S., L.S.

(Concluded from p. 26.)

7. ACCIDENTAL VARIATIONS OF RESULTS.

It has been necessary, in drawing our conclusions, to altogether avoid relying on the results of isolated experiments. Whatever precautions may be taken to insure uniformity in the conditions under which agricultural experiments are conducted, unaccountable anomalies in the result will be found to occur; variations which affect all agricultural crops, and which should be fully recognised and guarded against when inferences are drawn from experiments.

The only way to remove such sources of error is to throw together the average results of a number of independent experiments, so that the irregularities tending in either direction may neutralise each other. I would cite, by way of illustration, the individual trials making up the average results given under the first head. I have already stated that the average balance on 13 experiments, in favour of 2 oz. over 1 oz. sets, was 1 ton 13 cwt. 2 qrs. 7½ lbs. per acre; but if we come to details, it appears that, out of these 13 experiments, 5 show a result in favour of the 1 oz. sets, and 8 in favour of the 2 oz. This proportion, 8 to 5, taken by itself, is not very striking, and might be accidental; but when the sum of the weights of the gains in favour of the larger sets is placed against that in favour of the smaller sets, the proportion is increased to 25 to 5.

	Net Balances.			
	tons.	cwts.	qrs.	lbs.
The gains per acre on 8 experiments, in favour of 2 oz. sets over 1 oz. sets, is	27	8	3	22½
Whilst the gain on 5 experiments, in favour of 1 oz. sets, is but	5	12	2	6½

Leaving a balance in favour of 2 oz. over 1 oz. of 1 ton 13 cwt. 2 qrs. 7½ lbs. per acre.

Even this result taken singly might be merely accidental; but when the other steps in the same series show precisely similar tendencies, the general tenor must be accepted as confirming the indications given by the majority of the individual experiments.

In comparing the produce of 2 oz. and 4 oz. sets, out of 12 experiments, the net results of 8 are in favour of the 4 oz. sets, and 4 in favour of the 2 oz.

	Net Balances.			
	tons.	cwts.	qrs.	lbs.
The gains per acre on the 8 experiments, in favour of the 4 oz. sets, amount to	28	19	3	2½
And those on the 4 experiments, in favour of the 2 oz. sets	9	15	2	11½

Leaving a balance in favour of the 4 oz. over the 2 oz. sets of 1 ton 12 cwt. 0 qrs. 1½ lbs. per acre.

In comparing the produce of 4 oz. and 6 oz. sets, out of 9 experiments, 7 are in favour of the larger sets, and 2 of the smaller.

	Net Balances.			
	tons.	cwts.	qrs.	lbs.
The gains per acre on the 7 experiments, in favour of the 6 oz. sets, amounted to	30	0	2	15½
These on the 2 experiments, in favour of the 4 oz. sets, to	12	12	2	10½

Leaving a balance in favour of the 6 oz. over the 4 oz. sets of 1 ton 18 cwt. 2 qr. 19 lbs. per acre net.

Advancing from 6 to 8 oz. sets, out of 5 experiments 2 are in favour of 8 oz., and 3 in favour of 6 oz. sets.

	Net Balances.			
	tons.	cwts.	qrs.	lbs.
The sum of the gains per acre on 2 experiments, in favour of 8 oz. sets, amounted to	7	13	3	22
And those on 3 experiments, in favour of 6 oz. sets, amounted to	6	17	2	27

Leaving a net balance in favour of 8 oz. over 6 oz. sets, of 5 experiments, averaging 3 cwt. 0 qrs. 27 lbs. per acre.

Of the whole series of 39 experiments, 25 were in favour of large sets, and 14 showed an opposite tendency; but the proportion borne between these numbers does not fully represent

the actual result, which is more fairly stated by the weights of the balances on either side; for whilst the gains on the 25 (acres) experiments calculated per acre amounted to 9½ tons 3 cwt. 1 qr. 6½ lbs. in favour of large sets, the gain (14 acres) on the 14 experiments favourable to the smaller sets amounted to only 3½ tons 17 cwt. 1 qr. 27½ lbs., leaving (after setting the gains against the losses) an average net balance, on the 39 comparisons, of more than 1 to 10 cwt. in favour of the larger sets on each advance, namely, from 1 to 2 ozs., from 2 to 4 ozs., from 4 to 6 ozs., and from 6 to 8 ozs. I have been particular in noticing these exceptional irregularities, and their general bearing on the tenor of the experiments, as an element inseparable from agricultural experiments, and as requiring the fullest recognition in the estimation of results.

It now remains briefly to recapitulate the general bearing of the experiments, the results of which have been described in detail.

Firstly. Every increase in the size of the set, from 1 oz. up to 8 ozs. in weight, produces an increase in the crop much greater than the additional weight of the set planted. *The net profit* over and above the extra weight of the sets in planting 4 oz. sets in lieu of 1 oz. sets, amounted on the whole series of experiments to between 3 and 4 tons per acre; and the further *profit* on the increase of the size of the set from 4 ozs. to 8 ozs., averaged about 5 tons an acre; all the intermediate steps partaking proportionately of the increase.

Secondly. The advantages in favour of the large sets is more marked in the late than in the early varieties.

Thirdly. In the use of small sets of from 1 oz. to 3 ozs. in weight, a larger balance over and above the weight of the sets was obtained by planting from 6 to 9 inches apart in the rows than at wider intervals.

Fourthly. Increasing the intervals at which the sets are planted, even of the largest size, in the rows to more than 12 inches, diminishes the crop, and the wider intervals induce no increase in the weight of the produce of the individual sets.

Fifthly. It may be broadly stated that the weight of the crop is proportionate to the weight per acre of the sets, and that small sets will produce the same crop as an *equal weight per acre* of large sets. The fact is, however, of limited application, as a weight of very small sets equal to a weight of full-sized potatoes could not be got into the ground, except by planting them so close as to be prejudicial to the crop. The advantage, therefore, of large sets remains practically unimpaired.

Sixthly. *Weight for weight* cut sets produce, as nearly as possible, the same weight per acre as whole potatoes; but for the reasons given above, the weight of the sets should not be reduced by subdivision.

Seventhly. Smaller sets give a larger produce in proportion to their weight than the larger sets.

Eighthly. When the intervals between the sets in the rows are diminished to less than a foot, the produce of *each individual set* is proportionately diminished. Though this is not necessarily accompanied by a diminution of the weight of the crop, no increase in the produce of each individual set is caused by placing the sets at intervals wider than a foot.

Ninthly. With reference to the relative produce of different varieties, a *Late Red* sort takes the precedence throughout the experiments; and of the several varieties of Fluke, "Spencer's King of Flukes" and "The Queen of Flukes" are much more prolific than the ordinary variety.

How to Kill Weeds.—By attending to the following directions, weeds may be completely extirpated:—1. Study their habits. Without this you are working in the dark. You are shooting without taking aim, and are more likely to miss than to hit. 2. Have faith that weeds can be killed. 3. Should you, for the first year or two, see little benefit from your labour, do not relax your efforts. You will certainly triumph in the end. This is the experience of all gardeners; and a firm conviction of this truth is one of the strongest incentives to perseverance. 4. Be forehanded with your work. This is exceedingly important. It is so not merely because weed-plants can be killed easily just as they commence to grow, but it often happens that many weeds actually go to seed before they get large enough to attract attention. Many think it impossible to free the land of Couch or Quick Grass (*Triticum repens*). But it will be found that they are *not* forehanded with their work. They apply labour enough, but it is too late. They let the plants grow until the ground is covered with the leaves of the Couch, and *then* they hoe and rake and cultivate, and maybe fork out as many roots as possible. But they cannot get out the whole. The roots are broken into small pieces, and each piece produces a new plant, which soon pushes out its roots in all directions in the loose and mellow soil. Had the work been commenced *before* the Couch plants

pushed out their leaves, and been kept up so vigorously and continuously that the young shoots could not get above the surface, and the soil constantly cultivated during the hot dry summer months, every Couch plant would be destroyed. We have tried the plan, and know that Couch can be effectually got rid of in this way. But no half-way measures will succeed with it. 5. Burn all the thistle-heads and other weeds that are cleaned out of the garden. 6. Look to the manure. This is a fruitful source of weeds.

THE ARBORETUM.

HARDY TREES AND SHRUBS.

BY GEORGE GORDON, A.L.S.

THE MEDLAR THORN (CRATEGUS ARONIA).

This is a hardy, robust, rapid-growing thorn, and one of the finest of the fine genus to which it belongs. It forms a tree from fifteen to twenty-five feet high, with a straight stem and upright rigid spindling branches, thickly furnished with short spray. It is a native of mountainous parts of Greece and



Leaves, 2½ inches broad and 2¼ inches in length, including the footstalk.

the Levant. It grows well in any good garden soil, and is easily increased by means of grafting on the common thorn. It was first introduced in 1810. It forms a fine object, both when in flower or in fruit, and is admirably adapted for planting in small gardens or places of limited extent. It is never attacked by the larva of the thorn moth, which so infests and destroys the foliage of the common hawthorn and some other kinds.

The leaves are rather large, deeply divided into five open bluntish lobes, wedge-shaped or tapering to the base, and when fully grown smooth and glossy green above, and downy beneath. The lobes are in equal pairs, with the terminal one frequently trifid, and, except three or four unequal coarse teeth at the apex, all of them are quite entire on the edges. The stipules at the base of the leaves are rather large, one-sided, cockscomb-shaped, and irregularly and deeply cut on the outer edge. The flowers are rather large, pure white, very fragrant, and produced in great profusion in compact corymbs in June, long after the common hawthorn and most of the other kinds have done flowering.

The fruit is globular, very large, bright yellow, and mostly contains two bony seeds; when ripe, in the end of August, it has an agreeable taste, and hangs on the tree till the leaves drop off in November or even later. It is sometimes called *Crataegus fissa*.

PINE TREES AS MEDICINAL AGENTS.

ALTHOUGH some forests are regarded as sources of malaria, and oak trees and hazel hushes have been counted insalubrious in Europe, like the tamarind tree in the East, yet the air of pine forests appears always grateful to the lungs, and has been considered wholesome, although of its absolute curative influence there is little evidence, and, indeed, it must be difficult to procure such. The idea of pine forests exercising a balmy influence on the lungs is a very ancient one. Pliny considered that the air of pine forests was more useful in phthisis and in convalescence from acute diseases than the voyage to Egypt recommended in such cases in those days. Both Bournemouth and Arcachon at the present day owe a good deal of their reputation to their pine woods. The air of the latter is said to be distinctly sedative. On the whole, then, the air of the pine woods of the Black Forest may be regarded as an element entering into the consideration of the value of its baths. But besides merely inhaling the air of its forests, people have of late years made much use of the products of pine in baths, vapour baths, and inhalations. Even this is not entirely modern; for the ancients recommended chiefly the internal use of decoctions of strobili and of pine tops, and thought pine nuts very useful in diseases of the chest; and at a more modern time, besides the internal use of drinks made from the spruce and the tar-water so long in vogue, we had inhalations of tar and of various resins. The ancients did, indeed, recommend in gout baths of water in which cedar wood had been boiled, but the use of the pine-extract bath is quite modern. It has spread rapidly, and is in use at Gleisweiler, Rehburg, Liebenstein, Ruhla, and Eisenach. These aromatic extracts are procured from various pines—as from the *Abies excelsa* or Norway spruce, silver fir, *Pinus sylvestris* or Scotch fir, *Pinus maritima* or Bordeaux pine, the Weymouth pine, also from the common larch, and the most fragrant of all, from *P. pumilio*, the mountain pine. The baths vary considerably in strength and in odour, according to the way in which they are prepared. The commonest way of making the bath is by adding to common water a certain quantity of the decoction got by passing steam through the young pine-tops.—*Lancet*.

A Tree Hotel.—Of all the hotels in the world, the very oddest is a lonely one in California, on the road between San José and Santa Cruz. Imagine ten immense trees standing a few feet apart and hollow inside; these are the hotel, neat, breezy, and romantic. The largest tree is sixty-five feet round, and contains a sitting-room. All about this tree is a garden of flowers and evergreens. The drawing-room is a bower made of redwood, evergreens, and madrona branches. For bed-chambers there are nine great hollow trees, whitewashed or papered, and having doors cut to fit the shape of the holes. Literature finds a place in a leaning stump, dubbed "the library."

NOTES AND QUESTIONS ON TREES AND SHRUBS.

Prunus tomentosa.—This is one of the handsomest of spring-flowering hardy Japanese shrubs. It is also one of the earliest to bloom, commencing to do so in the beginning of March, and producing a succession of flowers up to some time in April. The flowers are large and white, with a very slight tinge of flesh-colour at the base, and are so numerous that they completely cover the shrub, which is little more than three feet high, and forms a very branching, compact, and roundish bush. It is propagated by cuttings and seed, which it yields freely, and will, no doubt, prove a valuable acquisition to those who supply our flower markets.

Cerasus Lannesiana.—This species, which was sent from Japan to the Jardin d'Acclimatation, in the Bois de Boulogne, in 1870, by M. Lannes, of Montebello, forms a valuable addition to our hardy ornamental flowering shrubs. In its general aspect it resembles the common wild cherry of our woods, and flowers in the beginning of April, when the tree is almost entirely hidden beneath a dense mass of rose-coloured flowers, producing a very striking effect. As the plants flower when very small, they may be grown in pots for the market. The tree is very hardy, and will grow in any soil that suits the wild cherry.

The Wax of Plants.—Professor de Bary publishes a paper on this subject in the *Botanische Zeitung*, thence abstracted into *Nature*. The wax does not appear to be a simple coating on the surface, and to form a continuous layer, as though laid on with a brush. It is found to be a dense forest of minute hairs of wax, each having one end on the epidermis, the other either rising straight up or rolled or curled amongst its neighbours. This matting of the waxen hairs is often sufficiently dense to give the surface, when viewed by the microscope, the appearance of a continuous layer, though a good section of the leaf or skin of the fruit indicates its structure. The question as to what part of the epidermis or subepidermal tissue forms the source of the wax is most beautifully and clearly answered. Professor de Bary states that it is impossible to discover the slightest trace of wax in the cell contents, or to entertain the theory that chlorophyll is partly made of wax. The locality in which the wax can first be detected is the cuticle and the cuticularised elements of the epidermis cells.

GARDENING FOR AUGUST.

THE INDOOR GARDEN.

BY T. BAINES, SOUTHGATE.

Conservatory.—The deficiency of blooming plants in conservatories at present may be compensated by a liberal admixture of such things as *Dracaenas* and *Coleus*. Of the former take such kinds as *Cooperii*, *ferrea*, and *terminalis*; the bright markings of their leaves will supply the place of flowers, and the plants will not receive injury for the next two months by being placed in a house without fire heat; neither will they suffer so much as flowering plants would by standing somewhat closely, the greater amount of air and lower temperature of the house, compared with the stove where they have grown, having the effect of stopping them from making much growth whilst in the conservatory. The different varieties of *Coleus* should be placed so as to get as much light as possible, otherwise they become drawn and have an unsightly appearance. The old *Plumbago capensis* is another useful plant for this time of the year, which is not grown nearly so much as it deserves to be. The present is a good time to propagate it. The small half-ripe side shoots will strike freely inserted in small pots under bell-glasses in a little heat. These, when struck, should be encouraged to make growth before the autumn gets too far advanced. They should be wintered in a temperature of 45° or 50°. In the spring they should be headed down and potted in six-inch or eight-inch pots, using good fibrous loam. If desired, some may be grown on in larger pots, but for general decoration they are more useful in a comparatively small state. The plants will last for years by cutting them back in the spring just before they commence growth and when they have broken, removing a portion of the old soil, which replace by new material, returning them to the same or a size larger pot. *Fuchsias* should have their seed pods picked off regularly, or they soon cease to flower freely; they ought to be supplied twice a week with weak manure water. *Double Petunias* are very useful at this season, either as decorative plants or for furnishing cut flowers. These should receive regular attention in the way of stopping and tying, to induce them to break back, or, from their quick somewhat straggling habit of growth, they become unsightly. *Lilium auratum* is a most useful subject for conservatory decoration at this season, but should not be introduced in too great numbers at a time, as its perfume, being so powerful, is oppressive. Attend well to the different varieties of *Lilium lancifolium*, by keeping them neatly tied out, and supplying them regularly two or three times a week with manure water, otherwise the soil becomes exhausted, and they lose their bottom leaves, which destroys half the beauty of the plants. They must on no account be allowed, at this season especially, to suffer from want of water, even for ever so short a time, or the same mishap will follow. *Chrysanthemums* should at once receive their final shift, using from eight to ten, or twelve inch pots, according to the size the plants are required to grow; ten-inch I find the most useful size. No plants are more useful, or more easily grown than *Chrysanthemums*, and that are oftener seen below mediocrity than otherwise, and this generally through an insufficiency of water in any stage of their growth. After the roots have got fairly hold of the soil in their blooming pots, they should receive strong manure water every other time they are watered. They will bear it as strong as any plant in cultivation. The mushroom-shaped style of training is the most in favour with those who grow them for exhibition, but it is unnatural and useless for general decorative purposes. Plants of the larger varieties, confined to from two to five shoots each, neatly tied to a stick, the head of the plant brought out to about twice or thrice the diameter of the pots they occupy, will be found the most useful, and this will give them ample room for the development of their foliage, which, if they are well grown, will be of the darkest green. As the shoots of the large kinds branch out in growth, they should be thinned to the number of flowers the plants are intended to carry, leaving one flower to each shoot. The plants will carry from six to eighteen, according to their strength. To those who have not tried this thinning process, it may appear a great sacrifice in quantity; but either for cutting or for decoration on the plant, one good flower is worth three inferior ones. And flowers so treated will last fresh on the plant fully a third longer than others that have been insufficiently thinned. The *Pompones* also require thinning, but not so much as the large varieties, neither in the reduction of the number of shoots nor to the number of flowers each shoot will carry; these may be left from three to half a dozen to each terminal shoot. The first batch of *Cinerarias* should now be in their flowering pots, six-inch ones, and should be encouraged by watering once or twice a week with manure water; shade slightly in the sunny part of the day, and keep them quite clean from aphides. *Primulas* should be similarly treated, with the

exception of keeping them a little drier at the root. Strike more cuttings of Hydrangeas, for succession. Attend well to Euphorbias, Poinsettias, Salvias, Bouvardias, and things in general for winter blooming. Press of other work frequently causes these things to be somewhat neglected, but in the case of quick-growing plants of this description, neglect is fatal to their flowering satisfactorily when the time comes that they are required.

Stove.—Attend to the training of climbing plants, or they soon get a confused mass. Keep a diligent look-out for insects of all kinds, for they increase with the high temperature of the season, and if left even for a time entail much more labour and do a great amount of injury. Give now a little more air, less shade, and less water at the root, as well as in the atmosphere. This will assist the season's growth to ripen; but do not reduce the temperature of the stove, as we see frequently done, until the ripening process is complete, that is, the wood well matured and hard. Plants that are prematurely put to rest by the unnatural method of reducing the temperature before the growth is ripened, are almost certain to start into growth when not wanted, during the application of the extra heat required during severe winter weather; in which case it is useless to expect a satisfactory amount of bloom. Allamandas, grown in pots with the intention of training them on wire or wooden trellises, should have their branches allowed to grow loosely upright, until they are either opening their first flower buds, or nearly so; as, if trained down as they make their growth, they never bloom satisfactorily, as when the point of the shoot is brought down lower than the head of the plant, the first effort the plant makes is to adjust the balance of the sap, so rudely disturbed, by pushing the eyes of the shoots that are bent over the top of the trellis, and so starves the points of the shoots from which the bloom ought to proceed; and this holds good of all plants of a similar character.

Fern Houses.—Numbers of seedlings will make their appearance of some varieties, such as Adiantums, Lomarias, Davallias, Dicksonias, and these, if carefully taken up without materially injuring their roots, and potted in small pots, after which kept a little close until they get established, will be found very useful, either for standing amongst the larger plants, filling Fern-cases, or for decoration in other places apart from the Fern-house proper. All the stock should be gone over repeatedly during the season of growth with brush and sponge, in order to remove any insects that will now thrive apace with the warmth of the season, and which, if left to themselves even for a comparatively short time, entail a great amount of labour, and spoil the appearance of the plants.

Azaleas.—Continue to encourage the growth of these by closing the house early—say by four o'clock, syringing well overhead, and by throwing an abundance of water about the paths and floors of the house. It should be borne in mind that these are hill region plants, and that, in a state of nature, they grow in a moist atmosphere, different from what they often receive under cultivation, where we see them making their young growth with small sickly foliage. Azaleas are plants not easily killed, and consequently exist for years under such treatment, but they bear no comparison with plants well-grown.

Hard-wooded Greenhouse Plants.—Some of these plants will now have completed their growth, and may be placed in a sheltered place out of doors, where they will get a moderate amount of sunshine, which will harden their growth and help them to get through the dull autumn and winter months, without the attacks of that certain visitant to unripe foliage—mildew. The stock should be gone over twice a day in bright weather to see that nothing suffers from want of water.

Orchids.—Continue to encourage the completion of the growth ere short days are upon us, as plants that make and mature their growth whilst we have a maximum amount of light, are certain to flower more satisfactorily than growth that is made under opposite conditions. The whole stock should be gone over, so as to give it a thorough cleaning from scale, &c., and the pots may with advantage be thinly surfaced with a little chopped sphagnum and peat, which will protect the roots from attacks of insects. For scale, to one gallon of rain water, add eight ounces of soft soap, one ounce of tobacco, and three table-spoonfuls of spirits of turpentine; stir well, and let the mixture stand forty-eight hours; then strain it through a cloth and it is ready for use.

Heaths.—Encourage all, but especially the summer-flowering kinds to make their growth. In case of such as have almost completed it, move them out of doors, where they will receive all the light and air possible; but guard the pots from the full action of the sun, otherwise the roots may suffer, more especially such pots as are well filled with roots. They ought to stand on six inches of ashes to exclude worms, and if there are no means at hand to protect them from drenching rains, they should be laid down on one side during heavy rainfall.

THE FLOWER GARDEN FOR AUGUST.

BY GEORGE WESTLAND, WITLEY COURT.

FLOWER GARDENS are not in such good dress as they usually are at this season, owing to the long continuation of wet and the violent storms we have experienced, from which flower garden plants in some parts have suffered severely. But now that the weather is more favourable to their development we, in all probability, will be amply rewarded with an abundant autumn display, as the plants are strong and healthy. Great care should now be exercised in maintaining perfect order, neatness, and exactitude in preserving the outlines distinct in the training of the plants. The edging lines should be rendered faultless, as a bed with a broken edging is never satisfactory. Keep down weeds and have the grass neatly cut and in perfect order, for without the high polish of perfect keeping our gardens never give the looked-for enjoyment any more than would a disorderly drawing-room, however costly its adornments. Continue to propagate perennial and biennial plants. Transplant seedlings and such cuttings as were rooted early. Pay every attention to plants intended for spring embellishment in the reserve garden. After the middle of the month a sowing should be made of annuals intended for spring blooming, such as *Alyssum calycinum*, *Collinsia bicolor* and *verna*, *Lasthenia californica*, *Limnanthes Douglasii*, *Saponaria*, &c. Should the weather continue hot and dry, watering and other encouragements to growth should be attended to. Many of the foliage plants and *Violas*, *Verbenas*, *Calceolarias*, &c., are now benefited by liberal treatment and frequent applications of manure water. The propagation of bedding plants for next year should be commenced, but it will first be necessary to determine how the garden is to be planted so as to make sure of the quantities of plants of each kind determined upon, and thus prevent a useless multiplication of those not required. This regulates the space at command for wintering them in.

Geraniums may be propagated in shallow boxes, store pans, or in beds in the open border, and, when space can be afforded them, so as to have them potted up singly in autumn, the latter method is a sure and excellent one, as they make fine plants, and but little labour is necessary in preparing the beds for them; a layer of leaf soil and sand laid over the surface of the border and rendered solid, into which the cuttings should be dibbled firmly, and the soil settled about them with a good watering, finishes the operation, no further care than an occasional watering being requisite. The selection of cuttings is an important matter, and when these are selected in a firm state, rooting may almost be looked upon as a certainty. We prefer short firm cuttings, as they always produce the most compact plants. For the boxes, use loam, leaf soil, and sand, and place a layer of the rougher material over the drainage, previous to using the finer soil. The variegated varieties are more manageable in pots, and if space is available, we prefer to winter them singly in pots, as by this means they make the finest plants. According to the size of the pot, from one to twenty cuttings may be inserted in each. The pots should be well drained, using a compost of equal parts of loam, decayed dung, and leaf soil, with a free admixture of sand. After firmly inserting the cuttings, plunge the pots in frames that are fully exposed, and finish with a good watering. They will root with or without lights in favourable weather, but if lights are employed, a free circulation of air is indispensable.

Verbenas should now be propagated to insure their being well established and hardened off before winter. Much of the difficulty experienced in wintering *Verbenas* is traceable to the enfeebled state of the plants, caused by late propagation, which gives them no chance of recruiting their energy before the winter sets in. *Verbenas* should be propagated at once, and for this purpose we prefer pans well drained, over which is placed a layer of turfy loam and dung, filling up with over two inches of light soil and sand. Into this dibble the cuttings one and a half inches apart, and place the pans in frames that have been previously prepared, having as much fermenting material placed under them as will occasion a gentle heat. Plunge the pans in this bed, give a good watering, and thoroughly shade from sun, as they must never flag. By degrees as the plants become established remove the lights until they will stand full exposure. Then thin out the plants as they may require it. They will root equally well in a layer of soil placed over the surface without the pans, and lifted when rooted; but if the pans are thoroughly prepared with such material as will produce a free growth, we obtain no real advantage by so doing. *Heliotropes*, *Petunias*, &c., may also be propagated early in the month, so as to have them strong and healthy before winter. Layer and strike *Carnations* from cuttings. It is difficult to have too many of these; frequent sprinklings from a fine rose greatly facilitate their rooting. Plant out early rooted *Pinks* in prepared beds. Hedges should now be trimmed without delay. Shrubbery borders should be seen to and the growth regulated, so that the finer plants may not be damaged by being overgrown. More particularly will this timely attention be necessary when common *Laurel* and other free-

growing shrubs are planted to cover the ground. Such subjects must be kept in subordination, so as to allow perfect freedom of growth and every facility to ripen their wood. Such evergreens as are grown for the embellishment of French and geometrical gardens, should be carefully cut in, so as to preserve the desired form. Such plants as Yews, Cypress, Thujas, &c., may be cut into form by means of the shears; but the larger-leaved plants, such as Hollies, Bays, &c., must be kept trimmed by the knife, so as not to cut the leaves. Bays and Portugal Laurels we do not find benefited by much pruning at this season, for when well established they make very regular growth, and, with the exception of a few straggling shoots at this time of year pruning should be deferred until spring, as they look far more natural and stand the winter better.

THE FRUIT GARDEN FOR AUGUST.

BY WILLIAM TILLERY, WELBECK.

Outdoor Fruits.—During the past month the succession of terrific thunderstorms has been almost unparalleled in the midland districts. On the 9th, 11th, 12th, 13th, and 14th ult., above four inches of rain fell; and great floods were the consequence, damaging the fruit crops, especially Strawberries and Cherries. A fine dry period, with a tropical heat, set in on the 15th, which continued till the 24th, when other violent thunderstorms occurred on the 25th and 26th, with deluges of rain, making the total rainfall at the end of the month nearly six inches. All the dwarf pyramidal and bush trees of Apples and Pears, after such heavy rains, are making great quantities of watery shoots, and will want pinching in persistently. Fruit trees on walls are likewise making very gross shoots, and will want carefully disbudging, thinning, and stopping, so as to get the wood well ripened. Apricots, Peaches, and Nectarines on walls, are very thinly cropped this year in a general way, so that every attention should be paid to the trees to insure the prospect of a good crop of fruit next year. All the old canes of Raspberries done bearing should now be cut away, and the young shoots thinned and tied to stakes, so as to preserve them from high winds. New plantations of Strawberries if planted early this month will bear excellent crops next year. If some early layered runners are used for the purpose, the plants will be much stronger, and will not suffer when planted out. Where the earliest forced Strawberries have been planted out it will be found that they will yield a good supply in autumn, should the weather be favourable. Strawberry plants layered in July for forcing will now want shifting into their fruiting pots, using a good strong loam, with a little well rotted dung mixed with it. Press the soil rather firmly in the pots round the plants, and place a little soot above the drainage to prevent worms entering. I find pots of about five inches in diameter at the top are quite large enough to grow Strawberries to the largest size, and they take up less room on the shelves. When all are potted they should be placed in an open, warm situation, and watering should be well attended to, but should the autumn be as wet as the summer has been, this will be unnecessary.

Vineries.—Give the earliest house all the air possible as soon as the wood is well ripened, so as to bring the Vines into a state of rest. The earliest pot Vines will now have their canes well browned and ripened, and may be placed in the open air. If heavy rains occur in the autumn, the pots may be placed on their sides, so that the roots may not get drenched too much, before they are placed in the pits or houses for early forcing. In dull, damp weather, still give a little fire heat to the late Vineries, so as to get the Grapes thoroughly coloured by the end of September or middle of October.

Peach Houses.—The Peach and Nectarine trees in the late houses will now require every possible assistance to ripen the fruits perfectly, by exposing them to the direct influence of the sun and air. When the fruits are all gathered, the foliage must be kept clean and healthy by repeated syringings; sometimes brown scale puts in an appearance, but it must be eradicated as soon as detected. This pest soon diffuses over the young shoots and leaves a black sticky exuvia, but a strong solution of soft soap or Gishurst Compound, put on with the syringe or engine, will extirpate it, if taken in time. If the borders are dry after the crop is off, a good soaking of manure water will greatly assist the trees in ripening their buds.

Orchard House.—Syringings must be discontinued as soon as the fruit begins to ripen, and only as much water given to the roots as will prevent the trees from suffering. All the air possible must be given, and in very hot days damping the floors and stages will do something to save watering and keep the air healthier for the trees. Keep pinching all strong-growing shoots, on purpose to encourage strength in the weaker ones, and to keep the trees in form. Trees

in pots, that have ripened their fruit, may now be placed out of doors in a sunny situation, and if the pots are plunged in the ground it will save some watering at the roots in dry weather.

Figs.—The second crop will now be ripening, and if the foliage has been kept clean and healthy the fruit will now be in the highest perfection as regards size and flavour. I find it best to grow a select list of Figs, for many new varieties have lately been introduced, which are not so good as some of the older sorts for pot cultivation. De la Madeleine is a first-rate early Fig. Bourjassote Grise is another high-flavoured sort, and a sure bearer in pots. Lec's Royal Vineyard Fig is fruiting with me for the first time, and will, I think, prove an excellent variety. White Marseilles, White Ischia, and Brunswick are old varieties, and no better can be grown.

Melons.—The latest put out plants will now want a little manure-water to force them on, and if they are grown in pits the surface of the bed may be mulched, to prevent the sun from drying the soil too much. The laterals will want frequent thinning and regulating, and a healthy foliage encouraged, for upon this is the flavour dependent. I have grown some excellent Melons this year in boxes placed in the front of a pine pit; the soil used in the boxes was some turfy loam from the top of a limestone rock. Only from three to four fruits were left on a plant, and they were of a large size for the sort, and the flavour very good. The varieties were Victory of Bath, Queen Emma, Colston Basset, Golden Perfection, and a seedling from the Scarlet Gem, of the same high flavour, but which grows double the size of that fine early sort.

Cucumbers.—Late Cucumbers in frames will now want nearly daily attention in the way of stopping each shoot after the fruit is set, and placing them on a piece of slate or glass. Seed must now be sown to furnish plants for the winter supply in the house or pit. When some favourite sort is wanted for fruiting in the autumn, cuttings of it may now be struck to keep up the supply when the older plants have done bearing. Varieties of Cucumbers are now almost endless, and every gardener has his favourite kind for bearing in the winter, or for summer growth. It is the best way when a good free winter-setting variety is secured and proved, to take some trouble to save seed from a plant grown for the purpose, so as to keep the seed true to name.

THE PINERY FOR AUGUST.

BY JAMES BARNES.

As soon as the fruit has been well ripened and cut, the first opportunity should be taken to clear out and thoroughly cleanse the compartment by washing the glass, woodwork, and walls with water. Then prepare some boiling water, with which incorporate newly burned lime, sulphur vivum, and some fresh soot, and with this mixture give the walls, flues, and all corners a good washing twice, so as to fill up every crevice. The woodwork should also be painted over with good old white-lead mixed with boiled oil. After this all will become sweet, wholesome, and water-tight for some time to come. See to joints of the pipes, and examine and cleanse out both pipes and boiler. See also to the flues, fireplace, and bars, and have all properly adjusted, and in good working order. If the houses are heated only by flues, examine and clean them thoroughly, and wash them over twice, as above directed, in order to have all crevices stopped and in good working order. Renovate and renew all plunging materials, and lose no time in filling up again with fruiting plants that are about to start, for autumn and winter use. Encourage succession plants in every stage to make vigorous, sturdy growth by a kindly bottom heat and a strong atmospheric one, applications of good clear tepid manure water at root, and heavy applications of clear soot water from the engine or syringe, early in the afternoon, should be given, and air applied freely night and day. Suckers, of course, should be taken off as fast as the fruit is cut, with a piece of the old stem adhering to them, which assists holding them firmly in their pots, supporting them without a check till rooted, which they will do in a very short time on a kindly bottom heat, and grow on without loss of time. Unless suckers are constantly potted on as they become ready at all seasons of the year, there must be a lack of fine-seasoned well-prepared fruiting plants ready for every day in the year, to fill at once the places of those removed. Respecting the choice of suckers, I always made it a rule to discard those of plants that produced a number of suckers, and also those from plants that did not produce a first-class perfect fruit, and I never potted a crown but from a new kind, or an extraordinarily well grown fruit. It was a well known fact that few had a more perfect or beautiful stock of Queen and other fine varieties of Pines than I had at Bicton, and there I left as fine a pit of well swelled, handsome fruit as could be seen. There were also succession plants in every stage of growth, to keep up in future a supply for every day in the year.

THE KITCHEN GARDEN FOR AUGUST.

BY JAMES BARNES.

Look well to hoeing and surface stirring amongst and about all growing crops whenever a hoe or scarifier can be used amongst them, taking advantage of dry, suitable weather for performing this most essential practice in vegetable culture, which is not for the sake of destroying weeds, vermin and their larvæ alone, neither of which can get a chance of putting in an appearance if this is properly and duly performed, but more especially for the sake of maintaining a healthy, pulverized, sweet preparation for all and every succeeding crop. There is little use of heavy applications of manure and deep culture without a clean, open, sweet, pulverized surface at all seasons, that froely admits the atmospheric influences and the rain as it falls. Never rake the earth's surface, as that would form it into an even-bond floor after the first rain, thus stagnating the growth of advancing vegetation. Don't pick the stones, but allow them to remain so as to assist in keeping open the soil and retaining moisture; but, instead, apply stones and rubble to heavy adhesive soil. Never let it be said that you hoe the earth's surface about and amongst your crops for the sake of destroying weeds, for the weeds should never have a chance to appear. First reckon on the many times you can perfectly perform hoeing and scari-fying amongst your crops before a weed has a chance to put in an appearance to the once you can when a crop of weeds has got established, and the earth's surface got hard and bound through exhaustion, and calculate how much you have lost in weight and value of different crops by encouraging a crop of weeds. Keep the soil always cropped, which can be done by foresight in laying your plaus; you can likewise improve the land by deep culture, change of crops, and constant surface stirrings. Trench in, at all seasons, all the comestable rubbish and refuse vegetation. A liberal supply of manure and methodical application of salt and air-slaked lime in suitable weather are also very beneficial.

August is an interesting and busy month in preparing for autumn sowings and plantings. Trench every spare bit of ground, and continue to plant out Broccoli, Borecoles, and Coleworts; the latter in full crop, and succession ones thickly on well-prepared ground. They do not require above a foot apart each way, to produce nice little sweet crisp heads, beginning to draw early for thinning, for in five or six weeks they are fully ready. Cauliflowers and Cape Broccoli plant out freely and often for autumn and winter use. Of Carrots, make the last outdoor sowing of Early Horn and Early Dutch on a warm, well-prepared border, the first week in the month. The proper season has now arrived for sowing Cabbage in full crop for autumn planting, to stand the winter for early use next spring. On late, cold situations, sow in the first week of this month; but on deeply cultivated, well-prepared land, light or open warm soils, never sow a full crop of Cabbage till the 12th of August. Earlier sowings are liable to run to seed in early spring, instead of forming nice heads pretty early. Prepare sweet, pulverized, and healthy soil, to which apply a dredging of turfy peat or wood ashes. Prick out plants a few inches apart as fast as they obtain a few leaves and can be handled safely. In order to maintain strength and sturdiness, choose a few good early varieties that will stand thick on the ground and turn in nimbly; four of these will grow or turn into use, and a second crop will be planted, before one large Cabbage can be turned to account. The little varieties, too, are much crisper, sweeter, and more convenient for table use than big cabbages; take such as Atkin's Matchless, Nonpareil, Shilling's Queen, Early Dwarf Barnes, Little Pixie, Early York, or Enfield Market, which are all nice quick-coming kinds, and do not require much room. Sow also Red Dutch, Brussels Sprouts, Savoys, and Borecole, to stand the winter for early planting next spring. Continue planting out Celery on a good bed, prepared as previously recommended, but thicker together as the season advances. Remove suckers; earth up, and soak with good water, when necessary, all growing crops. Carefully avoid choking and smothering their heads. Of Chervil make two sowings for autumn, winter, and early spring use; also of American and curled cress. Sow Cucumbers on gentle heat, in order to get strong plants for winter crops. Have the cucumber-house or pit thoroughly cleaned, painted, lime-washed with hot lime slaked with boiling water, and with it incorporate some fresh chimney soot and black sulphur; apply it all over the walls, floors, and every corner in a pains-taking, methodical manner: give two coats of it, which will not only eradicate all insects, mildew, bad smells, &c., but will prevent their appearance for the next season. Both curled and Batavian Endive plant in succession. Tie up or cover to bleach on dry days such as are ready for daily use, and make the last sowing the first week in this month. The new Batavian is a capital variety to sow now, for planting on warm borders or sloping banks to stand the winter and to turn in early in the spring. Their nice white close heads, so much like a Cos Lettuce, are ready long before a lettuce can

be had, or to take up through the winter to place under cover to bleach. Leeks attend to, earthing up to bleach, and make the last planting. Sow Lettuce about the 12th of this month. The hardy Brown Egyptian and Bath Brown Cos stand the winter the best, and are the finest flavoured of all Lettuces. Sow a little in the first week to plant out, and afterwards take up for placing in a house or frame, for winter use. Sow also a variety or two of the Cabbage kinds, such as Hardy White Dutch, Hammersmith, Lee's Green, &c. Sow Onions also about the 12th, to stand the winter for spring transplanting. The following are good kinds, viz.:—Tripoli, White Spanish, and Portugal; two-bladed Deptford and Silver-skinned for drawing young for winter use. Parsley—thin, clean, transplant, and cut back a part of the overgrown leaves. Fill boxes with good rich earth, into which transplant strong plants for housing for winter use; sow some in a box for obtaining early plants for spring border planting. It is a good plan now to sow a small breadth of Parsnips, in order to stand the winter, and to produce early summer roots. Sow Radishes in variety once a fortnight, in order to have a daily succession of nice crisp roots, for Radishes are never better than they are in September and October. To Sea-kale apply moderate dredgings of salt in dark showery weather, and give every possible encouragement to a strong, luxuriant growth in this invaluable, wholesome, and useful winter and spring vegetable. Methodical dredgings of soot, besides encouraging a luxuriant growth and large crowns, also exterminate the slug and grub. Look well to the stopping and thinning of Tomato shoots; encourage the growth and fast swelling of the bunches of fruit by timely clipping and thinning out. The small green fruits thus cut off are valuable for pickling. Put in cuttings of Tomatoes this month to stand in their stock-pots till the beginning of the new year, when they should be shaken out, repotted, and placed in boxes in kindly heat, or turned out against the walls or ends of vineries, peach houses, or any convenient corner to produce early, ripe fruit in spring. Stunted, hardened, well-rooted autumn cuttings produce stubby, short-jointed, fruitful shoots, and are quickly converted into a fruit-bearing condition, whilst seedlings favour luxuriance and take much time to get into a fruit-bearing state. Continue to sow little, quick-growing Turnips on spare spots, such as Potatoes have been cleared from, leaving them a little thicker on the ground when hoed at this season of the year. Their growth can be wonderfully encouraged by timely thinning, constant attention to surface stirring, and an occasional dredging in showery weather with dry wood ashes and a little guano intermixed. Pretty, young, free, and sweet Turnips may thus be secured the whole of the winter, and a batch of early greens in spring.

Herbs of all kinds should be gathered carefully while in bloom, on a dry day, and carefully dried in the shade in an airy room. Sow the hardy, prickly variety of Spinach on well-prepared ground on or about the 10th or 12th of August to secure strong, healthy, productive plants throughout the winter; make another small sowing ten or twelve days later, to stand thicker through the winter to produce in early spring, previous to the spring season coming in. Harvest Shallots and Garlic; tie them into bunches, and hang them up in dry open lifts, or place them in some dry cold situation. Bend down the foliage of Onions carefully, laying them all one way, with a pole, in order to encourage the growth of the bulbs; harvest them when ripe; choosing a fine dry day, draw or pull, and tie them into convenient bunches as fast as pulled, and hang up at once in open sheds, on rafters or beams, or any other handy place to dry gradually. Do not allow them to lie about on the ground night and day after being pulled, which is sure to make them hot, stinging, and rank to the taste. No one can enjoy a rank, strong, hard-baked Onion any more than they can a sunburnt, green, or strong Potato. By the bye, I have been sorry to observe, in my rambles for some weeks past, that the Potato disease is making serious havoc in some localities, and is now becoming general everywhere, and quite noticeable to a casual observer.

"A NEW PROFESSION."

We have received the following from an old correspondent. The want that is indicated is perfectly intelligible, and the suggestion is not unreasonable:—At a time when parents are at their wits' ends to know how to provide for their sons, any suggestion towards the establishment of a new profession is worthy of consideration. Now, it may be a fanciful notion of mine, but it has recently possessed me very strongly that horticulture might be elevated to the rank of a profession. There are not many encouraging signs of the times, but among the few that present themselves to our notice is an increased love of gardening. This is especially observable in the vast suburbs of London, where every householder, great or small, devotes himself strenuously to the cultivation of his

two acres, or his acre, or even his quarter acre of garden. As he occupies his house all the year round, he has an interest in his little bit of ground which can never be felt by the owners of vast acres of garden land, the beauty of which they never see, as Loudon holds them when the flowers are at their best. I have heard ladies, not of the middle classes, say that they have never seen their roses in bloom. It is very different with people having small gardens, who not only know every bed, but have a personal acquaintance with almost every flower. It is upon such people that gardening has so good a moral influence. But they are subject to great disappointments and are often sorely perplexed. A large proportion of the people of whom I speak cannot afford to "keep a gardener," and would not have work for one if they could. They are driven to the precarious assistance of men who, with the smallest possible knowledge of horticulture, work at high wages by the day. Even those who have money enough and soil enough to "keep a gardener" are fortunate if they can get one, at the ordinary wages of a curate, with any knowledge of his business. There is a great want among middle-class people in the neighbourhood of London and other great cities or towns of an intelligent knowledge of horticulture. People would be willing enough to pay for this knowledge if they could only get it. Our roses or our grape-vines develop symptoms of disease, and we do not know how to arrest it. It is easy enough in the case of the "human subject." We send for the doctor. We send for a man who has made medicine or surgery (perhaps both) the study of his life, and he tells us what to do, and, if necessary, he does it. Now, why should we not know to whom to send in our horticultural dilemmas? Why should we not have our diplomated horticulturists, to whom we may send to rescue our trees or flowers from disease or death? Surely it is a pleasanter occupation to bind roses or to prune fruit trees than to cut off human legs or arms and to extirpate horrid cancers? A thorough knowledge of botany and horticulture is not more difficult to attain, and is not less ennobling when attained, than an equal knowledge of surgery and medicine. Why, then, should these pursuits not be erected into a "gentlemanly profession;" why then should we have rare exceptions in a Repton or a Paxton? Of course, the question may suggest itself, "Will it pay?" I am quite disposed to think that it would. I, for my part, and I have heard others say the same, would often be glad to pay my guinea for a visit from a skilled horticulturist. Such visits are sure to recompense the employer. Large sums are annually lost to us by the ignorance of the ordinary run of jobbing gardeners, who are often as obstinate as they are ignorant, and will have their own way to the detriment of their masters. Of course, if a man can afford to give a hundred and fifty or two hundred a year to a head gardener, he may obtain an amount of skilled labour which will render him independent of this occasional assistance. Such men may keep family physicians, private tutors, domestic chaplains, &c., and may be independent of outside doctors, preceptors, and even clergymen. But I am not writing for such men, but for the middle classes, and I am convinced that to them it would be a great boon.—*Pall Mall Gazette.*

OBITUARY.

COLONEL CHALLONER.

We have to record the death of Colonel Challoner, which took place at Portnal Park, Virginia Water, on the 26th ultimo. The gallant Colonel was in his eighty-fifth year. In his younger days he was a zealous supporter of the Royal Horticultural Society, was for years a member of its councils, and frequently presided over the attractive fortnightly floral meetings which the Society used to hold at 21, Regent Street, in years gone by.

MR. AUGUSTUS SMITH.

We regret to announce the death of Mr. Augustus Smith, of Scilly, the owner of one of the most interesting gardens in England. He was an enthusiastic lover of plants and a most liberal distributor of the innumerable fine species his gardens contained. Being in a very mild climate, numbers of plants from the Cape of Good Hope, Australia, and other warm countries thrive in his garden at Tresco as if at home.

COVENT GARDEN MARKET.—August 2nd.

Flowers.—Among Japan and other Lilies in the market this week may be seen the fine old-fashioned blue African Lily (*Agapanthus umbellatus*), well furnished with noble heads of bloom. Gladioli, of the Breuchleyensis section, are also abundant; they are grown in six-inch pots, and are well bloomed; cut flowers of the same, from the open ground, also continue to be furnished. Double-blossomed Pelargoniums are plentiful, each head being large enough to make a little bouquet in itself; other kinds are also plentiful, but for late blooming, preference

is given to double sorts. Prominent among plants in pots are *Petunias*, among which a white double sort seems to be the greatest favourite. Many sorts of greenhouse plants are likewise plentiful, among which the most striking are the scarlet forms of *Kalosanthes*. Flowering stove plants are for the most part confined to cut flowers, which are used in the formation of the finer descriptions of bouquets. A little white *Bouvardia* is now becoming very popular, and as a bouquet flower it has few rivals. Fine-foliaged plants consist chiefly of *Cyperus alternifolius*; several *Ferns*, such as different kinds of *Pteris*, *Adiantum*, *Asplenium*, and *Polypodium*; and *Coleuses*, among which the old *C. Verschaffeltii* still plays the most prominent part. There are also some nice little plants of *Caladiums* and *Begonias*.

PRICES OF FRUIT.

	s. d.	s. d.		s. d.	s. d.
Apples .....half sieve	2	0	to	3	0
Apricots .....per doz.	2	0		4	0
Cherries .....per lb.	1	0		3	0
Chestnuts.....bushel	0	0		0	0
Figs .....per doz.	4	0		10	0
Filberts .....lb.	0	0		0	0
Cobs .....lb.	0	0		0	0
Grapes, hothouse ..lb.	3	0		6	0
Lemons .....100	7	0		10	0
Melons .....each	3	0		to	6
Nectarines .....per doz.	4	0		15	0
Oranges .....100	8	0		15	0
Peaches .....per doz.	12	0		18	0
Pine Apples .....lb.	3	0		8	0
Plums .....per box	3	0		4	0
Strawberries .....lb.	0	6		2	0
Walnuts .....bushel	10	0		25	0
ditto .....per 100	1	0		2	0

PRICES OF VEGETABLES.

Artichokes .....per doz.	4	0		0	0
Asparagus .....per 100	0	0		0	0
Beans, Broad per bush.	3	0		4	0
Beans, Kidney ½ sieve	1	6		2	0
Beet, Red.....doz.	1	0		3	0
Broccoli .....bundle	0	9		1	6
Cabbage .....doz.	1	0		2	0
Carrots .....bunch	0	6		0	9
Cauliflower .....doz.	2	0		6	0
Celery .....bundle	1	6		2	0
Chilies .....per 100	1	6		2	0
Coleworts doz. bunches	2	6		4	0
Cucumbers .....each	0	6		1	0
Endive .....doz.	2	0		0	0
Fennel .....bunch	0	3		0	0
Garlic .....lb.	0	8		0	0
Gherkins .....per 100	1	6		2	6
Herbs .....bunch	0	3		0	0
Horseradish .....bundle	4	0		6	0
Leeks .....bunch	0	2		0	4
Lettuces .....score	0	6		1	6
Mushrooms .....nottle	2	0		3	0
Mustard & Cress, punnet	0	2		to	0
Nasturtium seed for pickling..... per pint	0	4		0	4
Onions .....per bunch	0	4		0	6
Onions .....bushel	3	0		6	0
pickling quart	0	6		0	9
Parsley, .....doz. bunches	3	0		4	0
Parsnips .....doz.	0	9		1	0
Peas .....per quart	0	9		1	6
Potatoes, Kidney...cwt.	4	0		7	0
Potatoes, Round.....do.	3	0		7	0
Radishes doz. bunches	0	6		1	0
podis for pickling pint	0	4		0	0
Salsafy .....do.	1	0		1	6
Scorzoneræ.....bundle	0	9		1	3
Shallots .....lb.	0	4		0	6
Spinach .....bushel	2	6		4	0
Tomatoes.....doz.	2	0		4	0
Turnips .....bunch	0	4		0	9
Vegetable Marrows doz	2	0		3	0

HARDY PLANTS IN FLOWER ROUND LONDON.

(FROM JULY 25TH TO JULY 31ST, INCLUSIVE.)

BY OUR OWN REPORTERS.

Acena myriophylla	Cyperus longus	Liatris spicata	Parmica cristata
Adenophora intermedia	Delphinium pallidum	Lilium pulchellum	Rhexia virginica
Lamarckiana	Desmodium canadense	Linaria vulgaris	Rudbeckia clemmatis
Agapanthus umbellatus	Dipsacus Fullonum	Lobelia syphilitica	Salvia purpurea
Anemone japonica	Sylvestris	Lupinus luteus	Salvia patula
Antirrhinum angustifolium	Dracocephalum speciosum	Lysimachia fistulosa	taraxacifolia
Argemone platyceras	Drosera longifolia	Monarda	Sanvitalia procumbens
Artemisia annua	Erianthus Ravenæ	Myricoccephalus	Scabiosa agrestis
Aster concolor	Eupatorium purpureum	Stuartii	Scutellaria galericulata
cordifolius	Foeniculum virescens	Myrtus tenuifolius	Sedum cyaneum
sericeus	Geranium Lambertianum	Nierembergia grandiflora	Ewersii
squarrosus	Gypsophila elegans	Nigella Fontanesiana	Jacquinii
undulatus	ramosa	Oenothera Drummondii	populifolium
Brizopyrum siculum	Hedysarum Onobrychis	Oxalis lasiaudra	pycnanthum
Callia coccinea	Helenium autumnale	Panicum capillare	Selliera radicans
Calandrinia nitida	Calliopsis Drummondii	Pascalia virginica	Sempervivum ruthenicum
Callimeris incisa	Campanula barbata	Pentstemon Jaffrayanum	Silene tatarica
Calliopsis Drummondii	Barrelieris pyramidalis	Menziesii	Solidago latifolia
Calliopsis Drummondii	Thomsonii	Phytocuma betonicifolium	Stachys durinacula
Calliopsis Drummondii	Catalpa bignonioides	Hibiscus Trionum	sarcpatria
Calliopsis Drummondii	Centaurea alpina	Holcus halepensis	Smithii
Calliopsis Drummondii	suavcolcus	Hypericum Coris	triuervis
Calliopsis Drummondii	Cerithe major	Impatiens glanduligera	Stevia purpurea
Calliopsis Drummondii	retorta	Ipomopsis elegans	Thymus Teucrium
Calliopsis Drummondii	Cleonia lusitanica	Justicia pedunculosa	Trachelium ceruleum
Calliopsis Drummondii	Convulvulus cantabricus	Liatris graminifolia	Veronica Buxbaumii
Calliopsis Drummondii	Coreopsis alata	Primella hysopifolia	Corymbosa
Calliopsis Drummondii			pinata
Calliopsis Drummondii			syriaca
Calliopsis Drummondii			Wahlenbergia grandiflora
Calliopsis Drummondii			Xeranthemum radiatum

Plants in this list are almost without exception such as have come into bloom during the past week.

THE GARDEN.

“This is an art

Which does mend nature: change it rather: but
THE ART ITSELF IS NATURE.”—*Shakespeare.*

THE MANAGEMENT OF KEW AND OUR BOTANIC GARDENS.

THE articles on the Hooker and Ayrton affair have brought to the surface a subject of the highest importance to horticulture. It is the great question—shall our public gardens be managed by men thoroughly conversant with the art of gardening, or by those who frequently have no knowledge whatever of it? In short, shall they be under the control of the best and most cultivated gardeners or under botanists? We cut the following passage from last Saturday's issue of a gardening contemporary:—“The attempt to separate the botanical from the horticultural department in such an establishment as Kew is, of course, absolutely absurd, and could not be carried out without the greatest injury to the utility of the garden.” We have never before seen in horticultural literature so much that is wholly wrong expressed in such a short passage. The separation of the horticultural from what is called the botanical department of such an establishment is not only not “absolutely absurd,” but it would prove the very greatest good that could befall it.

Horticulture is a profession embodying so many ramifications that it is difficult to find a man who possesses a good general knowledge of the whole. Men spend their lives at, and make their reputations from, such branches as fruit culture, as orchid culture, as arboriculture, and yet these are but a few of the divisions into which gardening has now grown. Difficult, however, as it is to secure a man with a good general knowledge of horticulture, we happily have in most civilised countries examples of brilliant success in this way. There are, for example, such men as the present curator of the botanic garden at Edinburgh, John Bain, late of the College Botanic Gardens at Dublin, Mr. Dominy of Chelsea, Mr. James Backhouse of York, M. Rivière of the Luxembourg Gardens at Paris, young Mr. Niven of Hull, and not a few others that we could name, who, gardeners in heart and soul, might be put forward as having something as near a perfect knowledge of the art of gardening, in its noblest aspects, as it is possible to attain. Yet, by our present system, we place such men under the direct control of a person who is, as a rule, utterly ignorant of the art, or science, or knowledge, or whatever it may be called, of horticulture. We could give, if space permitted, many instances to prove that “distinguished botanists” are as devoid of the knowledge necessary to keep a large collection of plants in good health as a housemaid. Nor do they, as a rule, pretend to any knowledge of the kind, and by giving into their hands the charge of a large garden and the control of an able gardener (it may be a man of genius), we injure ourselves and our art to a degree of which few have any conception. What should we think of builders or architects if they placed their most important works and their best men under the control of somebody who had never taken the least interest in building or architecture, but who had spent his life in assiduously examining and gathering stones? And such a plan is precisely analogous to what is followed in a good many public gardens.

And what is the result of this course? Just what we might expect—that all gardens not actually or virtually managed by real gardeners are generally in a poor, sometimes in a wretched, condition. Look at the Garden of Plants at Paris, which we see dragged into this discussion as an example of right management! Why, it is a standing disgrace to the very name of gardening, and about as ugly a plot of ground as one could see, except some of the Parisian cemeteries. And, travel where you will, you invariably find the botanic garden managed by the professed botanist hideous from the point of view of art or nature and, as regards collections, frequently inferior to private gardens or commercial ones. But in many cases extreme poverty frequently forms a good excuse.

How is it in the case of Kew? Never in the history of the world has a nation been so liberal to a public garden as England has been to it. £20,000 per year, and sometimes a good deal more, and as much as £60,000 for a single hot-house! When one considers the slender aid given by other nations to their public gardens, this reads like a fable. Yet in all the recent articles on the Kew affair, generous John Bull is incidentally alluded to as the meanest and most penurious of wretches. Well, for this princely sum what have we at Kew? Nothing to what such an immense revenue should entitle us. Take, for example, the collections of important types of vegetation. Ask any orchid-grower as to the state of the orchids at Kew and the extent of the collection, and he will most probably laugh with derision. There are scores of collections of orchids better grown and richer than those at Kew, as everybody knows who has the slightest acquaintance with orchid culture. Then go out of doors and look at the flower gardening. In this way it is an age behind some of the London parks, and we see the strange spectacle of such places as Battersea Park introducing abundance of beautiful change into its flower gardening in the shape of graceful and stately plants, while Kew lags behind. It is true the noble houses built in such a palatial manner by the Parliament or people of England, are well filled with large subjects, but can anything be more discreditable to the gardening of England than the general state of the plants in pots at Kew? Then look, again, to the question of novelties. Nobody thinks of looking to Kew for them. If we seek new conifers, or new and rare ferns, or new alpine plants of any class, we all have one or more gardens associated in our minds with such novelties, but we do not think of Kew in connection with them. It would be most unfair to expect that such a place as Kew should excel in everything; but, surely, from £20,000 per annum one would expect supreme excellence in some branches. And if the best collections of plants, and the best grown, are not at Kew, or not elsewhere, under the control of the botanist proper, where are they? In charge of our gardeners amateur and professional. Where is what is called our “scientific” horticulture? to adopt the phrase of the day, or, in plain English, where is our best and most advanced gardening? In the same good hands. And who are the pioneers—who are they who discover for us paths and pleasures new, in our always delightful gardens? Our gardeners only, and in that term are included all gentle and simple, rich or poor, who love their gardens. To name one single instance only, Mr. James Backhouse, of York, has done more to refine and ennoble gardening than all the botanists who ever had charge of a botanic garden. And this is no reflection on the botanist, whose real work lies in another field.

The best managers of botanic gardens are invariably such as have had a thorough gardener's training, like Dr. Moore of Dublin, or Mr. Niven of Hull—men who have lived all their days among large collections of living plants in gardens; and it by no means follows that such men, because first of all excellent gardeners, may not also be good botanists. It is almost impossible that they can be otherwise. Such gardeners and nurserymen as Mr. John Smith, late curator at Kew, and Mr. Atkius, now of Painswick, are accomplished botanists; but the botany comes to such men through a life among living plants in the garden, and is an accessory to a fuller knowledge of gardening. Such gardeners may be compared to architects and builders who build nobly, but whose practice, tastes, and intelligence lead them to understand the classification of the stones they use.

It may be objected that when a botanic garden is wholly under the charge of a professed gardener, the general collections might suffer from his partiality for a few common types. The answer is ready: by far the most complete and rare collections and the best grown are those in the possession of amateurs, gardeners, and nurserymen. The real danger lies in the opposite direction—that is when a mere botanist has sole control, as at Kew. He is apt to select a cultivator only, instead of a really accomplished botanic gardener. Now we want good cultivators in all our botanic gardens; but in a first-rate curator that skill should be quite subordinate to a wide knowledge of every type of vegetation grown in gardens. Hence,

to select a man merely because he happens to grow well some one or two classes of plants, is a dangerous blunder. For such an individual would probably be as awkward as a rhinoceros in a glass-house as regards other classes of greater importance. It should never be forgotten that the trees and plants which are of the highest importance in a botanic garden in this country, are such as are quite hardy in the open air, and that one may quickly acquire a reputation as a cultivator of pot plants, without knowing or caring for any hardy subjects. Hence the absolute necessity of selecting a curator possessing a general knowledge of, and love for, every family of the garden flora. We could give more than one instance in which serious damage has been done to a valuable collection, by placing it in the hands of a person with a merely one-sided knowledge of plants. It should also be borne in mind that when a botanist has the appointment of the curator of a garden, he is, as a rule, not apt to select a first-rate man. Many professional gardeners know living cultivated plants, that is to say, know the botany or the flora of a botanic garden far better than many botanists. Obviously, except in the case of a noble nature, our botanist director is not likely to select a man who knows more than he does himself about the plants in the garden—the only things that either the visitors or supporters of such care a straw about.

Therefore, while we may subscribe to the memorial to the Government, now being actively canvassed for, that those who are "responsible for the culture of the plants, should also have care of the heating apparatus," it should be clearly understood by all that the only person fitted to be "responsible for the culture of the plants" is a thoroughly intelligent professional gardener. The connection between botany and hot-house boilers must, even to botanists themselves, be ridiculous. The botanist should have no more to do with the cultivation or arrangement of the living plants, than the gardener, or curator, or whatever he may be called, has with the herbarium. Where, as in some botanic gardens, there is no collection of dried plants, there is no necessity for a botanist *pur sang*. The whole march of modern progress tends to affirm more and more the great good resulting from special attention or life-long devotion being given to any one profession or subject of inquiry. The inflexible law of evolution is sure to break up some day this unnatural subjection of the gardener to the botanist; and the sooner the better. The botanist has his collections, and the wide earth in which to gather them. He has no chance of competing with the gardener, until he has first had a gardener's training. And to learn gardening thoroughly, in the sense in which it should be known to one fitted to direct a botanic garden, it is necessary that the best part of a life be given to it. W. R.

AFTER THE SHOW.

"AFTER the Battle" is one of not the least important of recent great pictures, and after the show affords one time for reflection. As you are aware, I am not a chicken. I can go back nearly forty years, when the Chiswick shows were comparatively in a state of incubation; and now from my window I perceive the Birmingham mud is being cleaned from the winter boots indispensable on that occasion. But we will not speak of the weather, further than to remark that the singular privilege of the Royal mother was not vouchsafed to the younger son on the occasion. The state of the handsome but wretchedly managed park at Aston shows that the Birmingham town authorities have yet much to learn in the way of appropriate keeping of public institutions, and though they may plead as a justification that the "people" are unprepared for it and would not appreciate it, depend upon it that so long as public institutions are neglected and allowed to go to decay by the custodians of them, so long will the "wage paid" classes cease to respect them.

Well, before we go further, will anyone inform me why grounds like those at Aston should not have been, for the time being, if not for all time, made into a beautiful garden? To me it appeared there was no reason, except that Bacchus usurped in a great measure much of what Flora ought to have had. Perhaps some day we may get back to the good old times, when, at Chiswick, Gunter was content to vend his wares in a back shed, and when to be seen with anything hotter than an ice or a glass of cherry brandy was a crime. Well, of the show. The large tent, though much larger than that

at Nottingham, was neither in design, effect, nor furniture nearly so good. It was too flat, too formal, too lineal; it was made up of little pettinesses, without the visitor in any one place obtaining a striking view that made a lasting impression upon the eye. Granted that the nature of the ground—water a few inches from the surface—forbade what might be called a bold contour arrangement; is that any reason why a rustic bridge, or a rockery, with the water gurgling to its base, should not have been extemporised, fore and aft, so that a full view might have been obtained of the fairy scene? There was no reason but that of expense, and that would not have been great; while a mass of good rockwork would have been a lesson well worth studying in the vicinity.

The large tent was really enjoyable, but those "laues of canvas," long, damp, dark, and ague-giving, must be done away with. We have had a foretaste of the large tent, and nothing less than an extension of that system must be tolerated. Narrow tents may do for a country show, but when they gather people by tens of thousands at a time, breathing and ambulatory space must be found for them. Above all things, provide an elevated point of sight, so that those who cannot go through may pass over and be able to say, "I have seen the show." With crowds, some arrangement of this kind is indispensable.

But the great difficulty is to leave the beaten track; custom has a strong hold upon the Executive of the Royal Horticultural Society. "Whatever is," with them, "is right," and innovators are set down as troublesome people. However, we have at last got them fairly on the road, and what is better, it pays; and now we must insist upon their moving with the spirit of the times, and giving us our full measure of instruction and entertainment. Roundhay Park, Leeds, will next year form a grand tilting ground, and from what I have seen of the spirit of the Leeds folk at flower-show time, from the mayor downwards, I know the Society will receive a right hearty Yorkshire welcome. YE KEN WRA.

HARDY PLANTS IN FLOWER ROUND LONDON.

(FROM AUGUST 1ST TO AUGUST 7TH, INCLUSIVE.)

BY OUR OWN REPORTERS.

Achillea pectinata	Campanula Hohenackeri	Gaillardia Drummondii	Rudbeckia grandiflora
Aconitum ferox	Cerintho gymnanandra	Geranium pyrenaicum	hirta
Kusnezoffii	Clematis campaniflora	Gladiolus branchleyensis	Neumannii
Adenophora communis	parviflora	Glycyrrhiza glabra	pinata
denticulata	Vitalba	Hypericum prolificum	speciosa
periploefolia	Clethra Michauxii	Inula squarrosa	Scutellaria alpina
Allium oleraceum	Convolvulus altheoides	Jasminum humile	Sedum altissimum
spirale	major	Leycesteria formosa	monregalense
Althea armeniaca	Coreopsis diversifolia	Lilium superbum	Telesphium elegans
canadensis	Coronilla vaginalis	Linosyris punctata	Serratula tinctoria
urbonensis	Cytisus polytrichus	Lophanthus urticifolius	Seseli leucospermum
Amarantus chlorostachys	Decodon verticillatum	Diplopappus rigidus	Silene hirsuta
Anemone vitifolia	Dracocephalum moldavicum	Mirabilis Jalapa	orientalis
Apocynum androsæmifolium	Dracopis amplexicaulis	Nycteria selaginoides	reticulata
Artemisia anethifolia	Eucharidium cochinatum	Panicum collinum	Spiræa Reevesiana
maritima	grandiflorum	elegans	Stachys speciosa
Aster corymbosus	Enonymus uanus	Eriogonum Pentstemon campanulatus	Symphandra pendula
levis	Eupatorium ageratoides	cordifolius	Tamarix germanica
lanceolatus	trifoliatum	Physgelium capensis	Teucrium flavum
Lindleyanus longifolius	Euphorbia marginata	Ophiopogon spicatus	Valeriana exaltata
macrophyllus	Felicia cotuloides	Oxalis Bowicii	Verbascum exaltata
preanthoides	Ferula neapolitana	Rhus glabra	Boerhavia guaiaculoides
recurvatus	seseloides	Rubus discolor pl.	Verbera pulcherrima
sagittifolius	Francoa ramosa	Rudbeckia fulgida	Watsonia marginata
undulatus	sonchifolia		Zauschneria californica
Atriplex hortensis rubra			Zea Mays
Bidens ferulifolia			
Callistephus chinensis			
Campanula formosa			

Plants in this list are almost without exception such as have come into bloom during the past week.

The storm on Wednesday last did much damage to crops about London, especially in the south-east districts, in which rain fell in torrents. Two girls working in a market garden at Charlton were struck by the lightning, and one of them was so much injured, that it is doubtful if she will recover. Trees in different parts of the country were struck by the lightning and split into fragments.

NOTES OF THE WEEK.

— MR. GEORGE MAW has just introduced the true *Saxifraga mutata* from the Eugadine.

— THE Parisians are just now occupied in replanting large trees round the lakes in the Bois de Boulogne. These have been brought from the Forest of Sénard.

— THE beautiful *Asclepias tuberosa* is this season producing freely its showy bright orange-coloured flowers in several collections round London. This fine perennial thrives perfectly well almost anywhere, if planted in sandy peat.

— THE plant of *Disa grandiflora* alluded to the other day by one of our contemporaries as having been "grown and flowered out of doors," was, we are informed, grown in a house until about two months ago, when it was placed out of doors in a sheltered position.

— WE understand that Lord and Lady Holmesdale have directed their beautiful grounds at Linton Park, Staplehurst, Kent, to be thrown open to the public on Tuesday and Friday in each week, commencing on the 9th instant, a boon which, we are sure, will be duly appreciated.

— THE weight of tea consumed in this country last year was 55,090 tons 2 cwt. 65 lbs., and the average quantity consumed by each person was about 4 pounds. The average price of the tea, exclusive of 6d. per pound duty, was 1s. 4½d. It is stated that the price of tea has never been so low since 1856.

— Two rare and pretty hardy plants, introduced by Mr. Maw, are now blooming in the Kew collection: viz., *Salvia taraxacifolia* and *Linaria villosa*. The latter is like the better known *L. origanifolia* in habit, and its flowers, which are freely produced, are of the same colour. It is a first-class rock plant.

— ONE of the best hardy aquatic plants in flower at the present time is the North American Pickerel Weed (*Pontederia cordata*), a plant by no means so often met with as it deserves to be. It produces a stout spike of handsome sky-blue flowers, from 1½ to 2 feet high. No ornamental water should be without this charming aquatic, which should, however, have a place near its margin.

— AT a meeting of the Metropolitan Board of Works, the other day, a letter was read from Mr. W. H. Smith, M.P., offering twenty wooden seats to the Board, to be placed along the Victoria Embankment for the use of the public. He was willing to leave the choice of the seats to the engineer of the Board, but wished them placed there as soon as possible.

— ONE of the most conspicuous objects to be seen now near the Albert Gate, in Hyde Park, is a mass of plants of the coral tree (*Erythrina*), nearly every one of which, notwithstanding the very unfavourable season we have had for such plants, has produced spikes of showy scarlet blooms, and whether seen from Rotten Row or from a walk which passes near the bed, they look equally attractive and striking.

— WE again call attention to the hideous little mud wall-like edgings to the flower beds along Piccadilly and in many other parts of the London parks. We had some hope that by this time the outer line of plants would have fallen over and hidden them, but this is rarely the case. The miniature mud walls are all cracked now. It is the most ridiculous and offensive innovation ever made.

— AN experiment lately made with paraffine for the purpose of testing its power to keep birds from eating seeds when sown, proved so far successful that, of a handful of radish seed soaked in the oil for fifteen minutes and then sown, not a seed appeared to have been taken, as all came up freely, and no protection was afforded, although birds were very abundant. American blight may be entirely destroyed, it is said, by an application of the oil. Paraffine may be safely used upon hard wood, but not so upon wood that is green and tender.

— IR ever vegetarianism had a good chance, says the *Telegraph*, it is at the present time. Matters are going on so seriously as regards flesh meat that we are likely to be driven into a botanical diet, whether we like it or not, and in spite of all personal and physiological objections. What with the dearness of coal and the costliness of meat, there never was a period when the enthusiasts for salad had such a noble opportunity for converting us to *herbivori*. Certainly we must economise if we are to remain carnivorous, and we advise housewives to obtain the receipts for *pillau*s and *kabob*s, and make these Mussulman dishes British. With a mere scrap of flesh, but plenty of rice and seasoning, the frugal Mahometan cooks a smoking *pillau*, or an appetising *kabob*, which costs next to nothing, and yet nourishes bravely. Our housekeepers must imitate him or fall back on Australian tins, for joints of fresh meat threaten to be soon mere curiosities.

— PART of Sardinia is covered by immense clouds of locusts. It is impossible to describe the damage done to corn, vegetables, and vines; the desolation is general; the air, the fountains, and the rivers are infested, and exhale an abominable smell.

— A VERY severe hailstorm passed over Deptford last Friday night. It completely riddled the leaves of French Beans, Beet, Mangold, and other brittle-leaved crops in the market gardens of the district.

— IF any visitor to London wishes to see the worst example of avenue planting that any capital in the world can show, let him look at the Mall in St. James's Park. Limes withering in July, dying elms and unfiled blanks are the objects that will meet his view.

— THE historical tree, known in Mexico as the "arbor tristis," under which Fernand Cortez sat and wept upon the memorable night when the discord and mutinous spirit of his companions had destroyed the fruit of all his previous efforts, was recently smeared with tar and petroleni and set on fire.

— A NEW kind of grape is being grown in America, concerning which the editor of the *American* says, "The skins are useful for umbrella covers." We hope no time will be lost in introducing into England a fruit which would be found so peculiarly fitted for our climate this summer.

— A PLANT of *Michauxia campauloides*, which is said by some to be a biennial, is now blooming for the third year in succession in Mr. Barr's trial ground at Tooting. It bloomed two seasons in the position in which it was raised from seed; last spring it was moved to where it is now flowering.

— THE forest fires of California have burned thousands of acres of woodland and the houses on several ranches. At night they can be seen fifty miles away. In the perfectly dry summer climate of California the giant trees burn rapidly; frequently by the roadsides one sees a prostrate monarch of the wood one line of fire.

— NEARLY all the essences employed in perfumery are of European production. England produces lavender and peppermint largely. At Nimes, attention is given to rosemary, thyme, and lavender. Nice makes violet its speciality. Cannes extracts the essences of the rose, the yellow acacia, the jasmine, and neroli. Sicily furnishes citron and orange; Italy, iris and bergamot.

— THERE is now in flower in the Hale Farm Nurseries, at Tottenham, one of the finest specimens of *Campanula pyramidalis* we ever remember to have seen. It has more than fifty spikes of bloom ornamented with some thousands of flowers, the spikes standing erect and at regular distances from each other. It is about twelve feet in circumference, and is certainly a magnificent specimen of this noble bell-flower.

— ARTEMISIA ANETHIFOLIA, one of the most graceful herbaceous perennials, as far as habit is concerned, that we know of, may now be seen in flower in the herbaceous department of the Royal Gardens, Kew. The plant is five feet or more in height, and the stems are thickly clothed with finely-divided leaves from the base upwards, while the flowers are produced in a noble panicle nearly two feet in length. In gracefulness of outline, this *Artemisia* will bear favourable comparison with the shrubby *Tamarix*es.

— THE *Victoria regia* at Kew is now finely in bloom, and promises to furnish its glorious flowers for a long time to come. It has already produced a dozen fine blooms, one generally appearing every alternate day. The plant has sixteen fine leaves, the largest of which is a little over six feet in diameter. It is to be regretted that the tank in which this noble plant is growing is much too small for the proper development of the leaves. At present the latter are a good deal confined for room, and are not seen nearly to so much advantage as they would be if the tank was twice the size it is.

— AT a meeting of a committee of horticulturists and botanists held in the rooms of the Royal Horticultural Society at South Kensington on Wednesday last, for the purpose of discussing the recently issued Treasury Minute relating to the management of the Royal Gardens, Kew, a resolution was passed in which grave doubts were expressed whether the fourfold division of responsibility, laid down in the Treasury Minute, in question, is likely to secure to the full the harmonious co-operation of the several officials. The committee were also of opinion that to put the pleasure grounds under different management from that of the rest of the scientific departments of the gardens was likely to be injurious to the interests of horticultural and arboricultural science. The committee regretted, moreover, to find that there was no direct provision made in the Treasury Minute for securing to the Director, in case of need, the services of an engineer specially versed in the management of hot-water apparatus as applied to horticultural purposes.

THE SIX OF SPADES.

CHAPTER XVIII.

Mr. Chiswick on Bedding-out (continued).

THERE are three seasons and three systems of bedding-out, the winter, the spring, and the summer.

If we regard winter bedding-out under the most auspicious circumstances, when the atmosphere exhilarates, and our digestion is good, and our debts are few, we may possibly derive from it about as much amusement as from a third or fourth rate farce; but if we criticise it severely after unpleasant letters, or a pill, or when the wind is in the east, we can only speak of it as the Attorney-General spoke of the Tichborne Claimant, and denounce it as an impostor, a humbug, and a sham. Beds of baby evergreens, new-born hollies, infant aucubas, tiny junipers, and the like, edged with variegated ivies, arabis, &c., with most of the variegation washed and frozen out of them—these, as they peep out of the snow, like a lot of black pins in a white pincushion, evoke the gardener's ire, not only as an insult to his art, but as the abortive attempt of an insatiate greediness to get more than generous Nature will give. For my own part, I can only think of two exceptional cases in which these feeble failures, dignified by the name of winter bedding-out, might be benevolently excused. They might be introduced into the garden of a retired nurseryman, superannuated and in his dotage, as soothing reminiscences of early life, or mamma might have a bed of them in front of the nursery window, and point to them, when reading the voyages of Gulliver, as charming illustrations of the forest scenery of Lilliput. "They be for children," as Lord Bacon said of yew trees clipped into dolphins and peacocks; and I remember an instance in which children made a striking and serio-comic use of them.

I was contemplating the only attempt which I ever made to realize the meek, modest, little idea of transforming winter into summer, and of breaking in the garden committed to my charge the annual sabbath of its rest—and I was thinking what a dreary disappointment it was, when my attention was drawn to the altered appearance of a bed, in which a large number of juvenile Irish yews were arranged with a dreadful uniformity. Little mounds had been raised here and there among them, and a large white wooden "tally," taken from the potting shed, was inserted at the head of each. On a closer scrutiny, the beak of a defunct robin was observable rising out of one of these small hillocks, while from another the corpse of an ancient doll exhibited its toeless foot; and my conjecture as to the meaning and intention of these arrangements was speedily verified by a sweet little voice, which said, "Oh, please, Mr. Tissick, me, and Blanche, and Bertie have been playing at Cementerry, and Victoria Eugenie would not go into her coffin (a cigar box), and Bertie went and got his night-gown, and was going, you know, to be a clergyman, but Blanche said pa would not like it, and so we gave it up."*

And I also gave up playing at Spring. I saw that Winter, like an honest, handsome, old gentleman, disdained to dye his silvery beard and to act the dandy with a flower in his coat. I broke up my exhibition of dwarfs and pigmies, and distributed them in the shrubberies and borders. I parted with my magnificent collection of chromo-lithographs—that is to say, I removed in a wheelbarrow my walks, composed of coloured stones and shells, of brick dust, tile dust, coal dust, cockles, gypsum, and other cheerful rubbish. If, I asked myself, we

* Here I must tell a couple of authentic histories concerning dolls, in the belief that they will amuse the British public as they amused me. A six-year-old child, the son of the village schoolmaster, left his mother's side during the baptism of an infant in the church here, and had made some progress towards the font, when he was missed, pursued, and captured. Subsequently questioned as to his motive, he produced from his pockets two very dirty dolls, negroes in complexion and in scant costume also, and informed his parents, "he was going to take 'em to Mister Rennuds" (during my father's lifetime I was known in the parish as "Mr. Reynolds") "to be listened." Anecdote No. 2, is this:—Two wee lassies, aged five and six, were playing in a room with their dolls, and their mother, at her writing desk, was listening to their talk. The dolls were taken to various imaginary entertainments, walks, rides, drives, visits, and parties, and at last they were taken to church. "Now, dear, will you sit in this pew?" said one; "and will you, dear, sit in this pew?" said the other. Whereupon the mother saw an opportunity of improving the occasion, and interposed with the remark, "We don't have pews, you know, in our church; the seats are free and open to all, because all are equal there." And one of the little playmates immediately looked up and said, "Oh, yes, dear ma, but just now we're playing at very Low Church indeed!"

once admit this tea-garden trumpery, where are we to stop? I have seen, in the grounds of a suburban drinking-house, an *Araucaria imbricata* done in cast-iron, and painted appropriately a hottle-green. What if the idea should spread? What if somebody, with "no end of tin" and no beginning of taste, should "go in," regardless of expense, for a metallic winter garden, electro-plated Silver Hollies, Gold-leaf Yews, and real Copper Beeches? Why limit the collection to hardy shrubs and trees? Why not a Battersea Park at Christmas? Why not all the beautiful foliage of the stove? Why not *Alocasia metallica* in real bronze? Nay, why foliage only? Why not flowers and fruits? Why not purple Grapes, and blushing Peaches, and all the glowing splendour of August, defying 20° of frost?

Seriously, there is but one legitimate winter garden, and that no doubt an enjoyable luxury to those who can afford it—I mean under glass. But why should we crave it? Though we had neither greenhouse nor stove, we might be well content to rest with our plants and trees; to rest and be thankful for the past, to rest and be hopeful for the future. Some, of course, will say, "Ye are idle, ye are idle. You gardeners are always resting on your spades, always sitting under your vines and fig trees, instead of pruning and thinning." We need not make answer for ourselves. All who possess a garden and know anything about it, know this also, that never in the history of horticulture was so much required, and so much realised, from the gardener. For example, there is spring bedding-out, in my eyes by far the most attractive feature of modern horticulture. The most beautiful because the most natural; gladdening our hearts with a new happiness and with new hopes, just when Nature herself awakes in

"The delicious trouble of the spring,"

when the sap is rising in the branches on which the thrushes sing, and the child finds the first violet—blue-eyed and sweet as childhood itself—upon the sunny, southern bank, or comes tottering into the broad, green woodland "ride," holding up a primrose in its tiny fist triumphantly, as one to whom had just been given the first prize for a hand-bouquet. Then it is that the gardener's art, the art

"Which does mend Nature; change it rather: but
The art itself is Nature,"

changes and mends most successfully that which the first gardener marred and disfigured, because it is then most in union with Nature, assisting, developing, obeying, copying, as a loving, reverent disciple, and not dictating nor innovating, as a proud and omniscient lord. In a spring garden we "change and mend" only by multiplication, and by such improvement, or rather restoration, as vigilant care and cultural art can give. All our charming varieties of *Viola*, and *Primula*, and *Myosotis*, and *Anemone*, and *Erica*, for example, are collected and cherished there, when the first Primrose and Violet (as I have said), the Forget-me-not, and Wind-flower, and Wild Heath, come forth in their season, upon bank and mountain, in their woodland and moorland homes. The wild bulbs in their habitations (what time the Nottingham meadows are empurpled by their *Crocus* bloom) break forth into beauty with ours. The flowers in a spring garden look at home and happy. They know, as old friends, that they are welcome, and they smile their thanks. They are not as dainty and magnificent swells, who have been delicately nurtured (under glass), who seem too grand for their surroundings (as some brother in the Guards on furlough in his village home), and who will leave us, if foul weather come.

Then consider the diversity of colour, form, and combination which is found among these several flowers. Let us imagine that the winter is past, and that we survey their bright charms once more. Let us ask the beneficent fairy, who changed a pumpkin into a chariot to convey Cinderella to the ball, to transform one of those huge gourds which adorn our club-room into an omnibus, and bid Faucy drive us to—Spring Gardens.

(To be continued.)

S. R. H.

A FINE specimen of *Lilium speciosum splendidum* was exhibited at South Kensington the other day by G. F. Wilson, Esq. This long-stalked kind is one of the very best of what are known as Japan lilies.

THE INDOOR GARDEN.

EUCCHARIS AMAZONICA.

So rapidly has this noble stove plant grown in the estimation of the plant-growing public, that it is already almost as indispensable to the stove collection as is the lily of the valley and the white camellia to the houquet-maker. Indeed, the Eucharis bids fair to rival either of these, even with the Covent Garden people, and it is very extensively used among cut flowers. For room, stove, and, in the summer, conservatory decoration, it is equally valuable. To this we have to add that the best plants of it ever shown were grown by Mr. Howard, gardener at Bedford Hill, Balham, and that his success resulted from heavy waterings occasionally with mild liquid manure, a genial stove temperature, and repeatedly syringing them when in a state of

The Leaves of Drosera.—M. Ziegler has contributed to the Académie des Sciences of Paris (*Comptes Rendus*, May 6th) a series of observations on the irritability of the leaves of the sundew (*Drosera*). He finds that the hairs on the leaves exude from their extremity a small drop of glue, by which insects are caught. After an insect becomes attached, the exterior threads bend over it, covering it like the fingers of a hand, and do not straighten again till some days after, when a fresh drop exudes for a fresh prey. Albuminoid animal substances, if held for a moment between the fingers, acquire the property of making the hairs of the *Drosera* contract; except by contact with a living animal these substances exert no action on the hairs; and they lose their singular property by being repeatedly moistened with distilled water and dried each time in a water bath. In order to prove that the contraction of the hairs is not caused by animal heat, the substance was cooled before placing it on the leaf. The sensitiveness of the hairs disappears after repeated applications of the albuminoid substance, and their properties then appear to become reversed, showing similar sensitiveness to sulphate of quinine, which again restores them to their original condition of sensi-



EUCCHARIS AMAZONICA.

(From a Photograph of a Plant grown by Mr. Howard, of Balham.)

growth. It is another illustration of the fact, that cultivators generally have a poor idea of the true requirements of plants as regards moisture at the root when in a growing state. The splendid specimens we allude to, like other things grown by the same skilful cultivator, were not, when in want of water, simply watered once, but the first was considered merely a preliminary dose, and two others given. The fact is that, instead of the common statement made so repeatedly in the gardening journals, that most plants perish from over-watering, being true, the opposite is the case. Most pot plants that die perish from insufficient watering. Let it not be inferred from this that we recommend frequent waterings; one thorough one will save a dozen dribblings such as gardeners too often give, and therefore save time, and be far more effective and wholesome for the plants. The noble specimen, of which we now give an illustration, is engraved for us from a photograph of one of Mr. Howard's plants.

tiveness to insects after applications for a sufficient length of time. In all cases the contraction of the hairs is slow, commencing visibly in about a quarter of an hour, and is often not completed till after several hours.

Horticultural Vaporizer.—I am not acquainted with an apparatus that more effectually and economically distributes blight-destroying mixtures than the vaporizer of which you have given a representation at p. 84. The liquid mixture can be directed and precipitated with precision and effect upon any part of a plant infested with insects. A sulphurator constructed on the same principle throws little puffs of sulphur without waste upon mildewed leaves, and this also is a cheap and handy contrivance, which I have used with advantage.—W. INGRAM, *Belvoir*.

Primula denticulata.—I have had beautiful specimens of this really pretty plant, and I would recommend all who love Primulas to grow it extensively. If your plants are young, let them be potted in a mixture of half turfy loam, quarter sharp sand and quarter decayed leaf soil; keep them all summer in the shady part of a cold pit or frame. In autumn let them be protected from rain, and winter them in the warm end of a greenhouse. In February they will show flowers in abundance, and will keep in beauty for three or four months at a time; they do not seem to like cold winds or draughts, and therefore should not be exposed to them.—W. Stevenson.

THE FRUIT GARDEN.

FRUIT ON HOUSES.

CHOICE fruits are never better than when freshly gathered ripe from the trees, and this desideratum might be secured by the owners of even moderate-sized, garden-surrounded, or partly-surrounded houses, were their available walls and roofs covered with suitable descriptions of fruit trees. In making a selection for training over dwelling-houses and their associated buildings, due care should be had to combine the ornamental with the useful, by choosing only such kinds as are decided and showy in the colours of their fruits.

The grape vine is, and will ever continue to be, a favourite for growing on house walls, where the climate is suitable for perfecting its luscious clusters; but except in the southern portions of our island it can only be looked upon as an ornamental climber; although in more northern districts, where no vineries exist on the premises, a few of the most distinct foliaged sorts should always be grown in the warmest exposures for the garnishing of fruit dishes; and if the very earliest of these are selected, such as Miller's Burgundy, Parsley-leaved, Muscadine, Red Chasselas, Black July, Grove-end Sweet Water, July Frontignan, &c., ripe grapes might occasionally be gathered in remarkably warm seasons.

Among apples the Red Astrachan, Old Golden Pippin, Fearn's Pippin, Striped Juneating, and Red Quarrenden, will fairly represent the most conspicuous colours; and if many kinds of these, or most others, are wanted in small space they may be grafted or budded so as to have only a branch or part of a branch of each.

Pears generally present less showy surfaces than apples, yet among them are a few with really gay exteriors, such as the Forelle or Trout Pear, Louise Boume of Jersey, Seckle, and some others; while the less striking Jargonelle and the Marie Louise have acquired a reputation which insures their not being overlooked.

Among plums the yellowish colours and the light reds produce a more effective display than the greens and the dull dark coloured sorts; the White Magnum Bonum and the Golden Gage are good representatives of the first; the Victoria and Coe's Late Red, of the second; while the Greengage and the Old Orleans may be considered fair examples of the last two.

Cherries are of all fruits perhaps the most generally suitable for house-wall training, some of them being adapted for every exposure, and capable of perfecting even their deepest colours in the most sunless aspects; further, they can be had in perfection from the ripening of the May Duke and Belle d'Orleans in early June to that of the Belle Agathe and Rival in September and October, while their glossy surfaces exhibit all shades of colouring, from the whitish yellow of the White Heart and the marbled pale yellow of the Bigarreau Napoleon, through the bright reds of the Kentish and Carnation, to the deep purple and jetty black of the Black Eagle, Black Heart, and others.

Apricots, so conspicuous in spring from their being the earliest flowering of fruit trees, are scarcely less so for the rich orange of their ripening fruit in summer and autumn, commencing with that of the Red Masculine in July, and ending in September or the beginning of October with the well-known Moorpark and one or two others.

Figs, which can only be eaten in perfection when just plucked from the trees, may be ripened in succession for fully two months from the end of July, on southerly exposed walls in most districts, under an altitude of five hundred feet; and, independently of their rich and wholesome fruit, their characteristic luxuriant foliage should insure for them more general cultivation.

Peaches and Nectarines are more select in their choice of soil and situation than any of the fore-mentioned fruits, but, wherever circumstances are favourable to their growth, neither should be omitted; and if the large-flowered varieties are selected, the beauty of their spring blossom will, in general estimation, be scarcely surpassed by the chaste colouring and exquisite delicacy of their fruit in autumn.

A great objection to the more general cultivation of fruit is, that it tempts depredators to break in and destroy not only the trees in their hurried abstraction of it, but also to trample and injure the neighbouring flower-beds, plants, and ground. These objections apply with most force to small residences in and near towns; and often, in consequence of the disappointment and vexation caused thereby, have owners of wall fruit-trees been led to eradicate them, either leaving the walls bare or covering them instead with merely ornamental plants. Nevertheless such objections are really nutenable, and can be remedied by combining the ornamental with the fruitful, so as to cover all the lower parts of the walls, which are within easy reach, with showy flowering and foliaged plants, and occupying the higher parts, as well as the roofs, with fruit; to effect which it is only necessary to bud or graft the trees at the required height on

the lower growing ornamental plants. Of course this budding or grafting can only be done within certain naturally assigned limits; but such limits are considerably wider than is generally supposed, and are capable of still much farther extension if made the subject of careful practical experiment. To illustrate this more fully, the following may suffice:—

Having, some twenty years ago, a bare-walled gravel court in front of a partly plant-covered dwelling-house, it was resolved to clothe all the walls with vegetation; but the planting of fruit trees for this purpose being deemed inexpedient in consequence of the uninterrupted access which numerous labourers had to and through the court, a selection of ornamental plants was decided upon, among which were the after-mentioned, which were used as stocks. When they attained to sufficient size to allow of being operated upon at the height of the doors and lower window tops, apples of different kinds were grafted upon the showy semi-double Chinese crab (*Pyrus spectabilis*), and a variety of pears were "worked" upon the wild pear of Mount Sinai, as well as on the common quince, the double white, double scarlet, and the sub-evergreen Mexican hawthorns. All thrived remarkably well, the stocks being annually covered with their own flowers and foliage up to their junction with the grafts, which grew and fruited freely, till, in the severe winter of 1860-61, the Mexican hawthorn was killed by the intense frost, and a fine top of White Benrre pear which was upon it consequently perished. Among the old plants upon the dwelling-house was a White Magnum plum, in the form of a "rider," with gross-growing unfruitful centre branches; these were budded with Moorpark apricots, for which this plum proved to be an excellent stock, the buds taking, growing, and ultimately fruiting freely.

Of other ornamental stocks known to be suitable for fruit trees, the following may be mentioned:—For Apples—The profuse blooming *Pyrus floribunda*, the curious Japanese *P. Toringo*, several of the small fruited crabs, and the different variegated-leaved varieties of the *P. Malus*. For Pears—The snowy-leaved *Pyrus nivalis*, and other three or four allied hoary-leaved species, the variegated-leaved pear, white and yellow variegated, as well as the scarlet, and other showy flowering and fruiting varieties of the common hawthorn, and most, if not all, the ornamental species of *Crataegus*. When the quince is used, its lower portion might be made more ornamental by working its sides and spurs with the different varieties of *Cydonia japonica*, all of which take well upon it, and the pear is also known to grow on those more widely different species of *Pyrus*, the mountain ash, service berry, &c. For Plums—The variegated-leaved and double-flowered varieties of *Prunus domestica*, and the double-flowering sloe thorn, *P. spinosa fl. pleno*. For Cherries—The double-flowering cherry, double-blossomed gean, Fortune's pale bluish or rosy coloured double-flowering Japan cherry, the acubaspotted and variegated-leaved cherries, *Cerasus semperflorens*, *C. serrulata*, &c. For Apricots, Peaches, and Nectarines—the fore-mentioned plum stocks will answer if double wrought with the kinds best suited for the respective sorts. Almonds also make good stocks for the two latter, as doubtless would also the more robust varieties of double-flowering peaches.

Of probably suitable ornamental stocks for fruit-trees, a large number might be indicated as being deserving of trial. Thus the *Pyraecantha* and evergreen *Cotoneasters*, which work freely on the hawthorn, might be grafted upon it, and then with the pear. The quince is an excellent stock for that showy large-leaved evergreen, the *Photinia serrulata*; and were it in turn to support the quince, then in either of these cases wall pear trees might be made to present the anomalous incongruity of growing on evergreen basements. But this chapter of probabilities might be lengthened out indefinitely; and were anyone to take the trouble of thus doubly and triply interworking different kinds, many curious results might be achieved, and much more interesting knowledge derived as to the influence of the stock upon the graft, and *vice versa*, than we now possess.

As a rule, then, all spur-bearing strong-wooded growers, such as apples, pears, and the more robust cherries, should be regularly trained at about twelve inches apart, so as to correspond with the architectural outlines, and surround the door and window edges at regular distances of say six inches. These branches should be securely fastened to malleable iron loops previously inserted in the proper lines, and no driving or drawing of either loops or nails should be afterwards tolerated. The leading branches of kinds which bear upon their young wood should be secured in like manner, and their year-old fruit-bearing shoots held in position between them by small cross rods or wires. From the wall faces, the branches may be continued upwards over the slate or tile roofs, those on the first being held in their places by having small belts of tin or zinc bent over them, the ends being inserted under a slate on either side while on the latter they may be either secured to wires

fastened in the tile hollows, or by ties proceeding inwards under the tile overlaps to the laths. Late flowering fruits are most suitable for roof covering, as the blossoms are necessarily much exposed to early cold, and when the late spring frosts have been passed with safety, roof slopes are capable of producing apples, pears, and other fruits of surpassing beauty.—*Farmer.*

OUR FRUIT CROPS.

ADDITIONAL REPORTS.

Preston Hall, Maidstone, Kent.—All outdoor fruits are very scarce indeed in this locality. By chance you may hear of very small well-sheltered spots in which there are small crops, but they are wholly exceptions. The general report is either "very little or no fruit."—*W. BRADLEY.*

Redleaf, Penshurst, Kent.—As a general rule, outdoor fruit crops in this neighbourhood are all very much below the average; the exceptions are Cherries, which were pretty good, and Strawberries, which on high grounds were very good indeed, but on lower lying grounds very much cut up by frost in spring. Apples, except in isolated instances, are a total failure. Pears, very few. Apricots, one-tenth of a crop. Peaches, one-fourth. Plums, partial. Small fruits very thin.—*JOHN COX.*

Heckfield Place, Winchfield, Hants.—Of Apples we have here none. Pears are a good crop. Peaches and Apricots half a crop. Plums on walls a heavy crop, none on standards. Cherries of all kinds very thin. Strawberries a very heavy crop and fine. Raspberries very good. Currants, both black and red, very thin and blighted. Walnuts, none. Filberts, half a crop. In this district the Apple crop is a total failure, and in all other parts much below the average.—*W. WILDSMITH.*

Strathfieldsaye, Winchfield, Hants.—Out-of-door fruits in the gardens here, and, as far as I have seen, in the neighbourhood, are very scarce indeed. Of Apples I shall not have single fruits for bushels I have gathered in former years. Of Pears there are positively none on standards, but on walls, where protected, there may be about half a crop. Peaches and Apricots, though carefully covered with thick sheeting, are not more than a quarter of a crop, and the same remark applies to Cherries and Plums. Raspberries and Strawberries cropped well. Gooseberries and Currants I had none. I may add that the gardens are only a few feet above the level of the river Loddon, and we suffer very much from early and late frosts.—*JAMES BELL.*

Great Tew, Enstone, Oxfordshire.—Apples, Apricots, Peaches, and Nectarines are with us a total failure. Strawberries, Raspberries, black Currants, Cherries, Pears, and Plums are good crops; red and white Currants half a crop; Gooseberries a heavy crop; Nuts and Walnuts very few. Our orchard house, a lean-to 110 feet long by 18 feet wide, is heavily laden; the Peaches and Nectarines are very fine; our back wall is fifteen feet high, with standard Peaches and Nectarines trained against it; the pot plants are also well cropped, also the Pears and Apples in pots; this is now our sixth year of orchard-house work, and I can testify from our experience during that time that Pears and Apples are very far superior to those grown outside.—*A. MACPARLANE.*

The Deepdene, Dorking, Surrey.—We had abundance of bloom of all kinds in spring, but, with the exception of Pears, Gooseberries, and Strawberries, our fruit crops are very thin. With Apples a few trees are well cropped, on the rest there are none; they were attacked by a small grub or caterpillar, which destroyed the bloom wholesale. Of Pears we have a heavy crop, and plenty in the neighbourhood. Peaches and Nectarines very scarce, but the trees are making beautiful growth. Plums very scarce, none whatever on east and south walls, but a good number on west walls. Gooseberries abundant. Red and black Currants scarce, white very fine and a good crop. Strawberries have been a very fine crop, although some of the first blooms were destroyed by frost in May. Apricots none. Figs a fair crop. Cherries thin, and much damaged by blight. Grapes are a good crop; in fine seasons they colour well in this locality.—*Muscadines assuming a beautiful golden hue. Cob Nuts plentiful. Walnuts scarce. Altogether a poor fruit year, but a splendid one for vegetables on light soils.—JOHN BURNETT.*

Lambton Castle, Fence Houses, Durham.—With us here Apricots are a failure; the blossom was killed by late frosts. Of some kinds of Apples there is a fair crop, but others are a failure. Pears, plentiful on old standards; on young trees a medium crop. Plums moderate. Strawberries good and plentiful. Cherries moderate; Morellos very good. Peaches and Nectarines very thin. Small fruits abundant.—*J. HUNTER.*

Castle Gardens, Arundel, Sussex.—Our fruit crop this year is very thin; I have, however, a splendid crop of Pears. Apples, scarce; also Peaches, Nectarines, and Apricots. I have good crops of small fruit, though not so abundant as in other years. Everywhere in Sussex Apples are scarce.—*J. W.*

Luton Hoo Park, Luton, Bedfordshire.—Apples with us are almost a failure. Apricots we have none. Red Currants a very light crop, black a very heavy crop. Our Nectarine and Peach trees are not yet in a bearing state. Of Strawberries we had a fair crop. Cherries also a fair crop of Morellos; trees not in a good state. Gooseberries and Raspberries a very light crop. Pears a good crop on walls, very few on pyramids. Plums a fair crop on walls. Our Fig and Filbert trees are not yet in a bearing state.—*R. BUDD.*

Killerton Gardens, near Exeter, Devon.—The following is the state of the fruit crops in this neighbourhood, viz.:—Peaches, Nectarines, and Apricots, very few; trees looking well. Plums, very few. Cherries, a moderate crop; trees much blighted. Pears, a moderate quantity on some trees on walls; pyramids set very thickly, but all the fruit dropped, owing to the cold. Apples, very scarce; also the same in orchards throughout the neighbourhood. Red, white, and black Currants, very scarce. Gooseberries and Raspberries, both good crops. Strawberries, moderate; first blooms killed by frost.—*JOHN GARLAND.*

Bower Ashton, Bristol, Somerset.—The following is a fair and impartial account of the fruit crops of a considerable part of the counties of Somerset and Gloucester:—Of Apples and Pears we have scarcely any except on some trees (a good many) which were removed from one part of the garden to another in the autumn of 1870—a fact which points to the advantage of occasional removals or root pruning; on these there is a very fair crop, and the trees are healthy and clean. Peaches are almost a complete failure, and of those left few will be of any size. Plums, none on standards or walls; Apricots none; Figs very few. As to Cherries we had at one time a fair prospect of a crop, but owing to cold, frosty nights, the blooms did not set properly, and nearly all fell off. Gooseberries, Raspberries, and Currants a partial crop, but good and clean. Strawberries not half a crop, and not good in flavour.—*W. DODDS.*

Cleavelands, Lyme Regis, Dorset.—Fruit crops in this neighbourhood are generally deficient. Of Peaches and Nectarines there are scarcely any out of doors; of Apricots scarcely any are grown in this neighbourhood, owing to the trees being so short-lived; of Plums we have a very short crop. Bnsh fruits are deficient; Gooseberries below average; Raspberries fair crop; Currants had; the Strawberry crop has been abundant and good; Pears almost a failure; and in Apple orchards, of which there is a large area in this locality, there are scarcely any fruit, consequently very little cider will be made this year.—*HENRY MUNRO.*

Castle Ashby, Northamptonshire.—We have more than average crops of Pears upon wall trees, but nothing at all upon standards or on any form of trained Pear trees except those on walls. Of Apples and Plums we have none. Cherries, a few Morellos. Apricots, none; the trees were well set with fruit, but it was destroyed by frost on the morning of the 20th of April, when we had 11°. Peaches and Nectarines, very few; mostly destroyed by April frost. Red, black, and white Currants, &c., a few. Gooseberries, a medium crop. Strawberries, very light. Raspberries, a good crop. I have a fine lot of pyramidal-trained Pear trees which bloomed beautifully, but the blossoms were all destroyed by the spring frosts.—*GEORGE BEECH.*

Aswarby Park, Folkingham, Lincolnshire.—Apricots are here only about half a crop; fruit, very fine. Apples, a quarter of a crop; fruit promises to be small. Peaches, on some trees, are a full crop, while on others there are none. Nectarines, the same. All standard Pear trees here are bearing a full crop, and the fruit promises to be clean and good; Pear trees on walls, about half a crop. Plum trees, both standard and on walls, a failure. Early Cherries a failure; Morellos, a full crop, and fruit good. Strawberries, a full crop; fruit large and of good flavour. Raspberries, a full crop, fruit large. Black currants, a fair crop, but red kinds a failure. Gooseberries a good crop.—*RICHARD NISBET.*

Croxteth, Liverpool, Lancashire.—Our outdoor fruit crops are very meagre. Apples are a total failure; Pears a scarce crop, and the foliage very much cut up; Peaches and Nectarines are a failure; Cherries a good crop, and good-sized fruit; Currants and Gooseberries are a fair crop; Strawberries a fair crop, but the fruit is very small. The fine weather we had in February and the severe frosts and winds in March and April were very much against outdoor fruits, and the heavy rains while the Strawberries were in bloom, and after the crop was ripe, spoiled our best fruit.—*JOHN BISSET.*

THE KUMQUAT.

(CITRUS JAPONICA.)

THE following information respecting this interesting and, when in fruit, pretty species of orange was communicated to the Royal Horticultural Society by Mr. R. Fortune:—"I found it cultivated over a large tract of country in China, but it was evidently most at home in the mere temperate parts—for example, in the islands of the Chusan Archipelago and on the mainland in the same latitude. Here large plantations were met with on the lower slopes of the hills, and very beautiful they appeared in autumn, winter, and spring, when the plants were covered with their golden-coloured fruit and deep green leaves. The fruit is much liked by the natives, who eat the skin as well as the pulp. Its chief value, however, is when used as a preserve. A large quantity is exported annually to Europe and America in China jars, preserved and sent home in nearly the same way as the better known China ginger is sent. In this country, however, we must look at the Kumquat as an ornamental plant only; and I really think that if our gardeners would set about its cultivation in the right way, they would find it easy to grow, and it would amply repay them by being one of the most ornamental plants for winter decoration. In the country where the Kumquat is found in the highest perfection, the common orange will not survive the winters; and, on the other hand, the Kumquat, when cultivated in the south of China, does not succeed, although the common orange is found there in the greatest perfection. The cold winters of the north, which kill the orange, are favourable to the constitution of the Kumquat. Both plants require warm summers; indeed, the northern summer is frequently hotter than the southern one. A hot summer temperature, varying from 80° to 100° (Fahr.), is necessary to enable the Kumquat to form its growth and ripen its new wood. In winter it will bear without injury from 10° to 15° of frost, and perhaps even a lower temperature than this. If we wish to have it in high health and vigour, we must keep it cold and rather dry in winter. During its season of growth in summer it ought to have a liberal supply of water, and a temperature of from 80° to 100°, and this heat should be kept up well even in autumn, in order that the young wood may be well ripened."

SUMMER PRUNING OF THE VINE.

THE system of stopping or summer pruning the vine now adopted everywhere throughout these islands, is radically wrong and injurious. We stop a joint or two beyond the bunch, and this is recommended in our latest and best treatises on vine-growing. This, it is argued, throws all the "strength into the bunch." Common observation of the growth of the vine would teach one to doubt the soundness of the principle; reason and the best practice prove that it is utterly needless and injurious. The noblest vine that we know of within easy reach of London is in Kay's nursery at Finchley. Taking size of tree—it is worthy of the name—combined with size and quality of bunch and berry, it is far before either the Cumberland Ledge or the Hampton Court vines. A vine is in its growing power like one of these great tropical climbers, or the gigantic sea-weed (*Macrocystis*) that attains a length of from two to six hundred yards; for, even as we cut and mutilate the vine, we find very large specimens here and there. Given a congenial temperature and good soil, it would be difficult to say how large a vine would not grow. But the merit is not in the length of stem or multitude of leaves; no big vine is worthy of the admiration of intelligent cultivators which is not as remarkable for the regular production of noble bunches and first-rate berries as for mere wood. We repeat, the Finchley vine is a far more creditable specimen than any large vine we have ever seen, and we draw attention to it now to illustrate a subject in which numbers of our readers are at present interested—the stopping of the shoots of their vines.

Instead of the sheets of this noble vine being stepped at one or two joints above the bunch, as recommended by the before-mentioned authorities, they are, on an average, stopped at five or six joints above the bunch. In fact, they can hardly be said to be stopped at all in the ordinary sense. The vine grows so strongly beyond the bunch that the usual stopping of gardens amounts to sharp cutting back or mutilation. By allowing them to make four, five, or six joints above the bunch, as at Finchley, the natural, or nearly the natural, amount of growth has liberty to develop, and the stopping becomes a mere pinching off of the half-exhausted and fragile apex. With the common mode of stopping there is usually much supplementary stopping and pinching, as no sooner are the sheets cut off beyond the bunches than the life-vigour we try to repress by stopping breaks forth again in the form of secondary shoots, which are, as a rule, mercilessly removed. This does not take place, or at least in but a very minor degree, where a more natural

development is allowed at first, and time is not lost in needless mutilation. Besides this, the leaves that cover the roof of the house are nearly all these that have unfolded early, and therefore become mere thoroughly matured. It is right to assume that it is not without need that the leaves roll out so rapidly in spring; secondary growths are the exceptions. The rapid way in which many of our trees lengthen their shoots and form leaves we all know. The generally adopted plan of stopping the vine tends directly to the encouragement of secondary growths. The shoots and leaves should be allowed to fill every portion of roof space in any house devoted to them as soon after the start of vegetation as they can attain to this length. In many places it may be that vines are planted so thickly that, if allowed to grow so long beyond the bunch, they would be confused; but in every case the cultivator may shake himself free from the notion that he is bound to step every shoot at one or two joints beyond the bunch, and do his best to secure free, natural, and healthy development above as well as below that point. Depend upon it, the bunches will be none the worse for an abundant stream of sap coursing past them—not going to rival bunches, but to leaves.

Colouring Pears.—To cause pears to colour handsomely, the *Agriculturist* says "all that is necessary is to spread a blanket on the floor of a cool room, and then to place the fruits thinly and evenly on the blanket. A second blanket must be spread over them, and in a short time the good effects of this treatment, in the way of colour, will be apparent. Pears perfected in this manner, rarely have the mealiness of their naturally ripened companions; nor do they prematurely decay at the core, as when left on the trees." This of course implies that they must be picked in advance of ripening on the tree, the time for which is partly indicated by a slight change of colour, and partly by a readiness to part from the stem when gently lifted, so that some strain is made at the point of junction.

Root Fibres.—When anyone who is about to plant fruit trees examines the roots as he receives them from the nurseryman, he finds some large, some medium-sized, and some small. The large and medium-sized should be shortened—that is well understood. Let me add that they should be shortened rigorously, no split or bruised parts being allowed to remain. But what is to be done with the small fibres which issue from the large and medium-sized roots? Some writers and practical men make great account of them, and say that they should be scrupulously preserved. I was for a long time of the same opinion, but now I think differently. These fibres, destined to perish, should be entirely removed. They are in the way when dead, and, when living, impede the action of the large and medium-sized roots, which alone are capable of producing fresh roots strong enough to insure a successful re-rooting and vigorous growth to the plant; moreover they prevent the soil from coming into contact with the roots, which is an essential point. My opinion is founded on the experience which I have had with pears grafted on the quince. Those who are disposed to question it should make the experiment.—*J. Courtois*, in "*Revue Horticole*."

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Orientation of Fruit Trees.—In *Les Mondes* we are told why some fruit trees in the open air are weak, contorted, and stunted. Their defects are due to the neglect of the precaution of placing them, when transplanted, as they had stood when in the nursery ground. It is the effort of these trees to recover their original orientation which causes their contorted appearance.

Fruit for the Roadside.—I wish our country gentlemen would consider how much may be done to make our roads more pleasant and beautiful by planting trees along them, if not continuously, at least in groups. The trees would not only be grateful shade in summer, but might break the force of the north-easter, 25° Fahr., in January. Fruit trees are often planted along the roadsides on the Continent—in many places near Geneva for example. Where the lanes are planted with tall scrub and low trees it would be very desirable to plant them with fruit trees instead. Grafted apple trees of good kinds are as cheap as common hardy trees; and surely, even if the fruit were to a great extent taken, it would be better to have trees which are at once beautiful and bear quantities of excellent food than the mixed rubbish that bears little even for the small birds.—*A. Dawson*.

Gathering late Pears.—Mr. John Garland, gardener at Killerton, a very successful pear-grower, in a paper read before the Devon and Exeter Horticultural and Botanical Society, says: "In reference to gathering pears, I always defer this for late sorts as late in the season as possible, that is, if the weather is mild and they do not drop off. I am convinced the later they are gathered the later they ripen, in proof of which I may say that Winter Nelis has usually ripened with me in November; I gathered them last year on November 5th, which is later than usual, and none of them have yet (December) ripened. I have had quite a succession from the same tree by gathering some two or three weeks earlier than others. We have generally a large supply of autumn pears, hence my desire to retard the ripening of later sorts."

Grapes in Bottles of Water.—The best kind of bottles for preserving grapes in water are those made of clear glass, of a size that would contain about a pint. In clear glass bottles, when the water, by means of evaporation and the small quantity sucked up by the bunches, has decreased, the deficiency can be easily seen and remedied. Champagne bottles would do for preserving a few dozen bunches, but they would be too large and clumsy to put in the racks where a large quantity of grapes are preserved. Pint porter or ale bottles do very well; I used them before I got clear glass bottles made for the purpose. The water in the bottles wants no changing, as it will remain perfectly sweet for three or four months, or longer, if some small pieces of charcoal are put in the bottom of the bottles. It only requires filling up now and then when it gets lower than the neck of the bottles.—*WILLIAM TILLEY*.

THE FLOWER GARDEN.

UHDEA BIPINNATIFIDA.

This subtropical plant is a native of Mexico, and is, as may be seen by our illustration, a very handsome-leaved one, and of a good habit. The leaves are of a slightly glaucous or silvery character. The plant is well suited for forming rich masses of foliage, not so tall, however, as those formed by such plants as the Ricinus or Ferdinanda; it may be seen in the London parks planted in large beds along with the Polymnia, Ricinus, Caenas, &c. We have seen it in a presentable condition when isolated on turf. It is easily propagated by cuttings taken from old plants kept in a cool stove, greenhouse, or pit during the winter months, and placed in heat to afford cuttings freely in early spring. Under ordinary cutting treatment



Uhdea bipinnatifida.

on hotbeds or in a moist warm propagating house, it grows as freely as could be desired, and may be planted out at the end of May or the beginning of June.

FERNS FOR BASKETS.

A MORE beautiful object I do not know for imparting grace and elegance to rooms, corridors, &c., than a well-grown basket of ferns, either suspended from the ceiling or from ornamental brackets in the walls. During the hot summer months the varying shades of green in their arching feathery fronds, impart an elegant and cool appearance; and when two or more sets of plants are grown for the purpose, so as to admit of frequent changes, the interesting features of this mode of room decoration are considerably enhanced. Amongst the best strong-growing ferns for large rooms are Polypodium aureum, Woodwardia radicans, and Aspidium exaltatum. Their long arching fronds have a grand appearance, especially when the rooms are artificially lighted. The bottom of the baskets should be covered with a few trailing sprays of Cissus discolor, hanging about in apparent negligence. This Cissus does well in baskets; short pieces of the old wood strike freely in early spring if taken off before growth commences. If the cuttings are put in in February, the growth of this plant is so rapid that nice young plants will be ready for filling baskets in April. Almost all the hardier kinds of stove and greenhouse ferns do well in baskets—not only those whose mode of growth naturally fits them for suspending, but many of the erect growers also; but the bottom of the basket should in all cases be covered with creeping or trailing plants, such as Panicum variegatum, Tradescantia zebrina, Isolepis gracilis, Lycopodiums, &c. The object should be to hide every wire of the basket, which should be made as plain and simple as possible. Highly elaborate and ornamental baskets are not required; they are more difficult to fill satisfactorily, and the projecting ornamental work to my mind seems out of place. Some time ago, when looking over a

lot of baskets in a shop, I made an observation to the preceding effect, but the dealer remarked that every man liked to bring into prominence his own handiwork. A plainly made basket, simple in shape, lined with green moss, and one or more plants planted in it according to the size, the bottom covered with creeping or trailing plants, which should be pegged in till the basket is covered, and then allowed to hang down negligently—this, according to my ideas, fulfils the conditions required in a tasteful basket of plants. Our baskets are home-made, and are generally circular in shape. A handy man after a little practice will make half-a-dozen to begin with in a few hours, and will soon be able to impart a certain amount of neatness to his work. As the wires are intended to be hid with moss and foliage, fine workmanship is unnecessary. We use two kinds of wire. A stout wire forms the framework of the basket, and is lashed together with a smaller wire; and when finished the whole is painted two coats to keep the wire from rusting. A file and a pair of pliers are all the tools required, and such work could be done on wet days. It is always best to fill a few new baskets every spring; there is thus always a lot of fresh young specimens coming on.—E. Hobday.

A LAWN POND.

I HAVE lately assisted in beautifying a "lawn pond," which has this summer done great justice to the pains bestowed upon it. The lawn is on the top of a hill, from which is a wide view of the surrounding country, and runs out from the house among glades of beautiful trees, limes, firs, and chestnuts. In one of these glades was originally a square pond, with low square turf banks, and no vegetation to speak of, except grass and the boughs of trees that dipped down towards the water. At length a lover of flowers introduced water lilies, and now they have spread in splendid masses across the pond. Next, bulrushes were introduced, which spread only too quickly; but their appearance is magnificent, and they crowd into a charming foreground at one end of the pond. The King-cup (*Caltha palustris*) was brought soon after, and forms a gay golden lining to the banks in the early spring. An expedition to some of the neighbouring damp ditches enabled us to procure a supply of Meadow-sweet (*Spiraea Ulmaria*), and the foamy heads of its flowers are now mixed with the tall grasses on the banks. The river Colne is about two miles distant, and two or three journeys resulted in plants of Willow-herb (*Epilobium hirsutum*), *E. angustifolium* (found on an old wall), *Scrophularia aquatica*, the Reed Poa (*P. aquatica*), a fine specimen of a Water-dock (*Rumex Hydrolapathum*), Marsh Carex (*C. paludosa*), Arrow-head (*Sagittaria sagittifolia*), purple Loose-strife (*Lythrum Salicaria*), Marsh Stachys (*S. palustris*), Branched Sparganium (*S. ramosum*), Water Veronica (*V. Anagallis*), simple Sparganium (*S. simplex*), common Skull-cap (*Scutellaria galericulata*), two kinds of Polygonum, Forget-me-nots, the Orange Balsam (*Impatiens fulva*), yellow Thalictrum or Meadow Rue (*T. flavum*), common Valerian, and Water Starwort. These were planted last year, and this year most of them are very flourishing, except the Orange Balsam, which seems to have disappeared, and the Arrow-head, which must be re-planted. A plant of *Osmunda regalis* was brought from North Wales and is doing well, and a little plot of Beech fern pegged into the bank close to the water's edge is fresh and lovely; close beside it grows the grass of Parnassus. The *Dresera retundifolia* was also brought from Wales. A little way out in the water stands one of our greatest treasures—the Sweet Cyperus, or Galingale (*C. longus*), doing very well, brought from a brook at the Lizard, Cornwall. The Cotton Sedge came also from Cornwall, and the Ivy-leaved Bell flower (*Campanula hederacea*). Some common Teazles were planted on one bank for the sake of their handsome appearance amongst the grasses and water plants. A wild rose-bush hangs its graceful branches into the water at one corner of the pond. We meet with some disappointments; but, on the whole, the plants have been very successful. We are careful to allow no mowing within some little distance of the banks. Live creatures abound. Little moor-hens run along the lily leaves, rabbits come out to feed on the lawn, and I regret to say, eat down a treasure occasionally in the pond. You can sit in the cool shade on a hot summer's day and listen to the splash of the fish, and hear overhead the gay laugh of the woodpecker and the clatter of squirrel's claws upon the bark of the fir-tree, while a harmless snake glides off into the bushes.

M. A. D.

Golden Veined Curled Dock.—This is the finest of all our native Docks, and is quite distinct from any other variegated hardy herbaceous plant in cultivation. I found it last year in a meadow in Buckinghamshire; the plant was quite young, so I dug it up, conveyed it carefully home, potted it, and gave it a start in a

cold frame. It grew away famously till towards the end of July, when it began to lose its variegation, and soon afterwards became altogether green. Being disappointed by this change in colour, I turned it out of the pot and threw it away. It, however, happened to fall at the bottom of a hedgerow, where it soon struck root, and there it remained till this spring. Having accidentally noticed it again coming up brighter than ever in its yellow livery, I lifted it carefully, potted it, and placed it in the greenhouse on a stage with a northern aspect. From that time it has retained its beautiful variegation, which consists of bright golden yellow veins spread over the entire surface of the foliage, rendering it about as handsome as one of the best of our Crotons. Last year it ripened seeds, but should these not reproduce variegated plants, it can be increased by means of division, at the rate of six young plants to each crown. I have seen many beautifully variegated forms of *Rumex obtusifolius*, *Acetosa*, and *Acetosella*, but they are all more or less inconstant in their markings; notwithstanding this, however, I believe that there are kinds in existence constant enough to render them worth cultivating.—WM. ELLIOTT, *Beechmont, Sydenham*.

Whence Come the Finest Roses?—I can assure Mr. Camm that I have grown, and hope to grow, much finer roses than those which he showed at Kensington and at the Crystal Palace, upon "the maiden briar"; and that, if he will appeal to our arboriculturists, he will find that the best blooms are gathered, as a rule, from the budding-ground. I will refer him to Mr. Cant, Mr. Turner, Mr. Keynes, Mr. Paul, and Mr. Cranston, and to the amateur who has most distinguished himself of late years, the Rev. E. N. Pochin. Some roses are as beautiful upon the *Mauetti* as upon the briar, e.g., *Baroness Rothschild*; but, again, I say, that as a rule the roses from the briar are the best; and I know that the authorities, whom I have mentioned, have proved this to be the case.—S. REYNOLDS HOLE.

A Good Garden Hedge.—*Berberis atro-purpurea* is said, in *Revue Horticole*, to form an effective and durable garden hedge. The plants should be set at an angle of about forty-five degrees, and four inches from each other; the stems, as they cross each other, being interwoven so as to form a sort of lattice-work with interstices of four inches across. As the plants grow they become naturally engrafted at the points of intersection, and present a solid and impenetrable fence. A hedge of this kind, kept to a height of about 3½ feet, requires no other care than that of one or two clippings in the year. A very pleasing addition is made to its appearance, by planting here and there among the *Berberis* a few Persian and other dwarf lilacs, clematis, honeysuckles, jasmines, and similar plants.

Variegated Veronica Chamædrys.—Variegated forms of *Veronica Chamædrys* are exceedingly useful in the spring flower garden or in select herbaceous borders. I have half-a-dozen kinds all differently variegated, but some of them are not sufficiently constant to make them suitable for general use. One variety, however, which has its young growth conspicuously variegated with creamy white, retains its variegation pretty well throughout the early part of the season, and will therefore be a welcome addition to our stock of dwarf variegated hardy plants used for margins of beds or borders in spring. As the summer advances it loses its variegation, but then it can be transferred to the reserve garden, and its place supplied with summer-flowering plants. It may be increased rapidly by means of division, and looks remarkably well on rockwork. The tints of variegation in this *Veronica* range from pure white to deep yellow.—WM. ELLIOTT, *Beechmont, Sydenham*.

A WHIRLWIND IN YORKSHIRE, AND ITS EFFECTS.

For several weeks back, scarcely a day has passed in this district without a thunderstorm, more or less severe, accompanied by perfect deluges of rain and violent gusts of wind, which culminated in a whirlwind on the 22nd of July, about a mile from the gardens here. Had we not seen its effects, we should not have believed it. It appears to have been a whirlwind and water-spout combined, as those who saw it describe it as having the appearance of a huge snake, whirling with erected crest and fearful speed across the country, and carrying with it branches of trees, hay, and debris of all descriptions. In a field on this estate, it seems to have been caught for a while, if I may so speak, and manifested its force and fury in a most extraordinary manner. This field is about three or four acres in extent, nearly circular, and, excepting a gap at one place, is surrounded by a belt of tall trees. The whirlwind appears to have entered by the gap, as it came across the district in this direction, doing much damage on its way, and, arrested by the belt of trees, it has torn round the field, uprooting or pulling up about a score of trees, and twisting off the limbs and branches of others in a remarkable manner, and carrying them along with it until it came to the gap again where it seems to have escaped, taking with it, just at last, the top of a hay-stack and part of the roof of a shed which was not protected by the trees. Several of the larger of the trees it seems to have caught by the top, and gathering up branches in its grasp, as one might gather the tops of a geranium in the hand, it has wrenched them clean off, leaving nothing but the stem of the tree and a few bare limbs. Off one birch tree, about nine inches

diameter in the stem, it has twisted the head about ten feet from the ground. Leaving this field, it has swept across a wheat field, in some places tearing the wheat out by the roots, in others just taking the ears off, and catching a large plane tree growing in the hedgerow, it has hurled it over with such force as to pull the tree entirely out of the ground, breaking every root, and leaving a large hole in the ground. The stem of this tree is about seven or eight feet in circumference. From here it can be traced for four or five miles across the country, but no further. What strikes one most in connection with this whirling column of air is its terrific force, considering the small area of its base, which does not seem to have been more than thirty or forty feet wide. The plane tree in the hedgerow has caught its full force, which must have been equal to some hundred horse power. The tree, one would imagine to have been partly pulled or twisted out by the root. Some of the branches have been torn off and carried away, but the trees on each side, growing in the same line, and only a few paces off, are untouched, showing that the gust has passed through between them. The same local effects are observable along its whole track. J. S., *Wortley*.

THE LIBRARY.

THE FLORE DES SERRES.

AFTER waiting over eighteen months, we have at last received the first three parts of the nineteenth volume of this beautiful work, which M. Van Houtte had promised to those who subscribed for it in advance on the 1st of December, 1870. This triple number contains, besides numerous woodcuts, twenty beautifully-executed coloured plates of floral subjects, and three double-coloured plates of Pears. The floral plates may be summarily described as follows:—1 and 2, a most beautifully and delicately shaded double plate of a somewhat difficult plant to figure really accurately, viz., the *Echeveria pulverulenta*, a greenhouse species of this interesting family, said to be a native of South California, from which country it was introduced by M. Louis de Smet, who first exhibited it under the name of *E. farinosa*. It is easily increased from seed, and so will soon become plentiful. Plates 3 and 4 are devoted to *Amaranthus salicifolius*, a now well-known plant, introduced by Mr. J. G. Veitch, from the Philippine Islands. Plates 5 and 6 are devoted to a beautifully painted portrait of the fine hardy *Lilium*, named by M. Max Leichth. *L. tigrinum splendens*. The true variety is extremely scarce, at least nine out of every ten in cultivation are not true to the name they bear; when true, it is an exceedingly robust-growing and handsome variety. Plates 7 and 8 depict the queen of all the Maiden-hair ferns, the exquisite *Adiantum Farleyense*, so well known to most of our readers. Plate 9 is an admirably painted portrait of the lovely Californian bulb named *Brodiaea coccinea*, first shown at South Kensington by that well-known introducer of new plants, Mr. W. Thompson, of Ipswich. Plate 10 shows the two varieties of double autumn flowering *Colchicum*, the rosy purple and the pure white, depicted with admirable fidelity. The white variety of this beautiful hardy bulbous plant is far too little known, and too seldom seen in our gardens, the extreme robustness of its growth, and the profusion with which it produces its lovely pure white double blossoms in the middle of the month of September, each bulb producing from ten to twelve, making it a most valuable adornment for the autumn garden. Plate 11 is a portrait of a rather curious greenhouse shrub, named *Pinckneya pubens*, a native of Georgia, whence it was sent by its discoverer, the botanist Michaux, to the distinguished Carlsruhe horticulturist, M. Max Leichth. Its somewhat insignificant flowers are produced in bunches at the end of the shoots, and are garnished with curious large white bracts, resembling those of the well known *Mussaenda frondosa*, but the bracts of the *Pinckneya* are bordered with red lines. Plate 12 represents a hothouse shrub named *Psychotria cyanocæca*, a native of Nicaragua, which produces large clusters of purple berries. This plant was sent to Mr. Bull by the late Dr. Seemann, who says it is a plant much to be valued for the very exceptionally fine colour of its fruit. Plate 13 represents a pretty *Camellia*, of a bright rose colour, irregularly mottled with white, named *Carlotta Papudoff*. Plate 14 is a faithful representation of the beautiful and rare terrestrial orchid *Utricularia montana*, so beautifully exhibited at South Kensington on the 5th of June from Lord Londesborough's gardens. Plates 15, 16, 17, 18, 19, 20, are the Pears already mentioned. Plate 21 represents another new and good plant introduced by Mr. W. Thompson, of Ipswich, viz., *Delphinium nudicaule*; but the picture, we think, hardly does justice to this beautiful hardy border plant, as the centre of the blossoms seems to us to show too much yellow, and the fine clear scarlet of the outer petals is not shown with sufficient distinctness. Plates 22 and 23 represent the now well-known Queen of Primroses, *Primula*

japonica, and have the same fault (to our mind a serious one) of representing all the four or five whorls of flowers open and in perfection at one and the same time, whereas the fact is that before the fourth whorl near the top of the flower-stem even shows its colour the petals of the lowest and first opened whorl will have long ago dropped and have been replaced by green seed-pods. Thus more than two whorls are seldom or never seen in full beauty on the same plant at the same time, instead of four or five. Plate 24 represents Messrs. Veitch's fine *Primula cortusoides* *arvensis* *Lilacina*; this we think scarcely so faithful to nature as the plates in this work usually are, as, while it somewhat exaggerates the size of the truss and also the size of the individual flower-pips, it does not do justice to the beautifully clear lilac streaked with pure white which characterises the flowers of this exceedingly pretty primrose. It is as hardy as all the other varieties of *P. cortusoides* *arvensis*, and even stands out of doors during winter at Messrs. Veitch's establishment at Chelsea. Plates 25 and 26 represent, with admirable fidelity, one of Mr. John Waterer's fine hybrid seedling rhododendrons, named Joseph Whitworth, and exhibited by him some three years ago for the first time at his annual exhibition of these plants in the gardens of the Royal Botanic Society in Regent's Park. Plate 27 represents a set of those curious abortions known as double Gloxinias, or what should rather, in our opinion, be more correctly designated imperfect attempts at hose-in-hose Gloxinias. We do not think that any one who grew them one season would wish to see them taking up pots and room in their houses a second year.

W. G. G.

AIR AND RAIN.*

SELDOM, if ever, has a work issued from the press with higher claims to public gratitude than this, the object of the author, as stated in the preface, being to supply a systematic foundation for such an accurate knowledge of the composition and qualities of the atmosphere, under varying conditions of place, time, temperature, &c., as must inevitably lead to vital improvements in our sanitary arrangements. With this laudable end in view, he has here brought together a vast number of important facts, verified by repeated experiments and accurate analyses. "Chemistry," he remarks, "has not hitherto done enough in sanitary inquiries, and it ought to be able to relieve medical men of much of their heavy responsibility." The volume before us, however, seems likely to make up for any deficiency which has been felt on this head, and although not entirely written in what is termed "popular" language, it is sufficiently so to be read with interest by that portion of the community who are competent to feel the importance of the subject. After laying down the standard of pure air, viz.,—

	Volume per cent.
Oxygen	20.96
Nitrogen	79.00
Carbonic Acid	0.04,

he proceeds to give analyses of samples of air collected from a great number of places in which it is always more or less impure: dwelling-rooms, streets, theatres, mines, hospitals, &c., and dwells strongly on the necessity of attending to the quantity of deleterious matter, the presence of which may be expressed even by a minute fraction. The details of the experiments, particularly those made in the closed lead chamber, cannot fail to show how earnestly and conscientiously the author has followed up his purpose, and are of themselves guarantees for the accuracy of his conclusions. As might be expected, a very large proportion of the book is devoted to tables of analyses, but these constitute its most valuable part, and, to our Boards of Health, supply data which are simply beyond value, and of which we trust they will not be slow to avail themselves. The same plan has been pursued by Dr. Smith with respect to Rain, specimens of which were collected from many parts of the country and analysed with various results. Most people think that no water is purer than rain-water, but these analyses prove that in the neighbourhood of towns this is not so, and that the rain which falls there is always more or less charged with impurities in the shape of sulphuric, or hydrochloric, or nitric acid, albuminoid ammonia, and near chemical works and blast furnaces, with arsenic acid and many other extraneous matters. It is the presence of these acids in the air which is so fatal to vegetable life in cities, the smoke of our chimneys always containing more or less sulphuric and other acids, which in dry weather poison the leaves, and in wet weather are washed down to and poison the roots of many trees and plants. Dr. Smith has found that "when the air has so much acid that two to three grains are found in a gallon of the rain-water, or forty parts in a million, there is no hope for vegetation in a climate such as we have in the northern parts of the country. The acid is calculated as dry sulphuric,

* "Air and Rain." By Robert Angus Smith, Ph.D., F.R.S., F.C.S. London: Longmans, Green, & Co.

but to some extent the agent may be hydrochloric rendered free by the sulphuric acid decomposing the common salt" (p. 246). The tables of analyses in this part of the book are very interesting, the samples of rain from different towns showing marked peculiarities in their composition, all, however, being more or less impure, and teaching us that if we want pure rain-water we must go for it to the open country or to the seaside (where it is purest). The volume closes with an extract from the report of the Belgian Commission on the Effects of Acids on Vegetation, in which the facts are stated with Continental minuteness and precision, and the subject discussed with considerable ability. In reading it, one of the most pleasing reflections is that the question is not confined to ourselves, and that, as the savants of other countries are devoting themselves to it in conjunction with those of our own, we may reasonably look for the discovery of such remedial measures as the intelligence of the age is, in a manner, bound to supply.

A BOOK ON ANGLING.*

MR. FRANCIS's high reputation as a master of the "gentle art" is more than sustained by his book, which is the most complete work on the subject that has yet appeared, and, as might be expected, has already reached a third edition. Treating of every branch of angling in a clear, practical, and exhaustive manner, he has bestowed especial pains on the chapters on fly-fishing for trout and salmon, which occupy the greater part of the book, and embody the results of his great experience in language pleasant to read, and intelligible even to juvenile disciples of the craft. The fullest instructions are given for tying artificial flies (with illustrations) and the preparation of tackle of various kinds, together with a carefully selected list of the best flies both for trout and salmon, the coloured illustrations of salmon-flies claiming especial notice. In fine, nothing has been omitted to render the book, what it is, the best book on angling extant.

THE GARDEN IN THE HOUSE.

CULTURE OF PLANTS IN ROOMS.

(Continued from p. 84.)

GENERAL RULES FOR SOWING SEED.

MOISTURE, a degree of heat adapted to the kind of plant, and air, are the three conditions on which the germination of seeds depends.

MOISTURE.

This is the first requisite. When water penetrates into the inner part of the seed it swells the germ, causing the outer envelope of the seed to burst, and dissolving the supply of nutriment laid up in the inside of the seed, which is to support the young plant until its roots are somewhat developed.

HEAT.

Heat is the stimulating principle; but the degree which is necessary for germination differs according to the natural habitat of the plant. Seeds of plants from cold, or moderately cold, regions will germinate in a temperature of from 35° to 45° Fahr.; those from temperate, or moderately warm, latitudes in a heat of from 50° to 65°; and seeds of tropical plants in one of from 70° to 90°. There are, however, many exceptions to these rules, of which we shall mention a few. Some of our commonest annuals, as for instance common chickweed, will germinate at a lower temperature than 35°. There are, moreover, many seeds of plants of cold and temperate regions which, even when suitable moisture and heat are applied to them in spring, do not germinate so soon as if they had previously been exposed in a moist state to a degree of cold below freezing-point. This appears to have the effect of disintegrating the particles of nutritive matter in the cotyledons, and so hastening the germination of the young plants. Of this class are the seeds of maples, *Cratægus*, and many umbelliferous plants, especially those found on the higher Alps, or in very cold latitudes. The seeds of many of the latter when cultivated are often sown in snow, as are also those of Alpine Roses, and different species of *Aretia*, *Azalea*, and *Gentians*. The seeds of trees and perennials from temperate regions usually germinate with the greatest certainty in a temperature of from 45° to 55° Fahr., and a higher temperature than this, so far from hastening their germination, usually impedes it. It is different with most annuals, the seeds of which germinate more speedily in proportion to the height of the temperature, provided it does not exceed 90°. Young plants of these kinds,

* "A Book on Angling." By Francis Francis. Third Edition. London, Longmans, Green, & Co.

after germinating, should at once be placed in a lower temperature. We shall here give a few examples of some of the commoner plants as illustrations of what we have stated. The minimum temperature at which germination takes place is from 38° to 40° for lentils, clover, lucerne, wheat, barley, rye, mustard, radishes, and cress; 43° for carrots, broad beans, and spinach; 45° for summer-blooming plants; 48° for buckwheat and maize; 50° for beans, and 55° for pumpkins. The maximum temperature at which germination takes place is 112° for cress, pumpkins, and maize; 110° for beans; 104° for broad beans, wheat, and barley, and 100° for peas. In such annual plants the nearer the temperature approaches the maximum the sooner will the seeds germinate: for instance, maize germinates in thirty to thirty-five days, in a temperature of from 45° to 56°; in twenty to thirty days, 67° to 75°; in seven to eight days, 90° to 100°; barley in forty to forty-five days, in a temperature of from 35° to 45°; in twenty to twenty-five days, 55° to 60°; in ten to twelve days, 94° to 100°. For tropical seeds we have named a temperature of from 70° to 90°; but there are some seeds which require a still greater heat to cause them to germinate: for instance, the seeds of the gigantic water-rose of the Amazon river require a heat of from 95° to 105° before they will germinate.

AIR.

The third condition necessary for germination is the free access of air. All the changes which take place within the body of the seed can only occur under the influence of air, from which certain gases are absorbed and assimilated by the seed, and by which other matters are removed from it. Therefore, no method of sowing should ever be used in which the air is entirely excluded from the seed.

Moisture, heat, and air, then, are the three conditions on which germination depends. If any of these are wanting, the seeds will not grow. The absence of light is often mentioned as another condition, but this is not really the case. Seeds are usually covered with soil when sown. From this, the idea has here and there arisen that absence of light is indispensable to germination. But the covering of soil is only necessary to preserve an equable condition of moisture around the seeds. If some of the finest and smallest seeds, as, for instance, those of *Calceolarias*, *Ericas*, *Rhododendrons*, *Epacris*, &c., are sown on the surface of the soil, and an equable condition of moisture maintained by covering the pot with a pane of glass, the seeds will germinate in the full sunshine much better than if they had received a slight covering of soil. This is a plain proof that absence of light is not a necessary condition for the germination of seeds. Some might be, on the contrary, led to hold that some degree of light, however small, is necessary to germination, as it is well known that seeds which lie deep in the earth, and possess the other conditions of warmth and moisture, yet do not germinate; but this is more properly to be attributed to the absence of air, for it can be easily proved that seeds will germinate in perfect darkness. The writer has found by experiment, that the seeds of cress germinate in perfect darkness quite as speedily as in the full sunshine, other conditions being the same.—*Dr. Regel.*

(To be continued.)

Plant-Baskets in the House.—The hanging-basket is perfectly manageable indoors, though rarely seen there. Some baskets have a little tap and cock placed at the lower point, so that the drainage may be drawn off with ease and at pleasure. A perforated false bottom allows the water to fall through from the roots of the plants to the lower receptacle, whence it is drawn off. There is a race of plants that, planted in this kind of basket, would require little or no water in winter, and these the reader may see in perfection in the succulent house at Kew. *Hecktia*, *Aloe*, *Tillandsia*, are likely to furnish the best things in this way; but there are other allied families from which valuable subjects may be selected. For such baskets nothing could be better than the various trailing and drooping plants which thrive indoors or in dry greenhouses. Even some ferns would do well; we have seen a plant of *Nephrolepis exaltata* stand for four months on a hall table, consuming abundance of water, and throwing its graceful fronds about as freely as in a fernery; and there are various others which thrive well in a sitting-room, notably *Asplenium flagelliforme*.

PUBLIC GARDENS.

SEFTON PARK, LIVERPOOL.

TEN years ago, Liverpool, the second city in the kingdom, had but one public park (Prince's Park), which was of no great size and was situated at some distance from the central parts of the city. The public voice soon called for additional places of recreation, and the Corporation, in 1863, demanded of the Government the necessary authority of an Act of Parliament to enable them to carry out these views. After a considerable amount of carefully prepared estimates, &c., on the part of the chief engineer of the city (Mr. Newlands), a large extent of ground was purchased to give Liverpool three parks, namely, Newsham Park on the east, Stanley Park on the north, and, last and largest, Sefton Park on the south. The ground for the last-named was purchased from Lord Sefton and Mr. Livingstone, for the large sum of £275,863. The total area of Sefton Park, which has been named after the principal of its former owners, is 387 acres. It lies south-east of Prince's Park, Ullet Road, Aigburth Road, Mossley Hill, and Smith-down Road. A natural rivulet, named Oskesles Brook, ran from north to south and formed a valley, which has been carefully made the most of and embellished; and a picturesque ravine, running from east to west, supplied an excellent opportunity of varying the aspects of the broken ground by the formation of cascades and waterfalls. From the highest point, which is about one hundred feet above the level of the Mersey, a magnificent view sweeps over the broad estuary of the river and the adjacent country, bounded by the outlines of the Welsh mountains and the hills of Overton. The ground having been secured, the Corporation, in November 1866, opened an international competition for designs and estimates for the formation of the park, and offered two prizes, one of three hundred guineas, and the other of one hundred and ninety guineas. A large number of landscape-gardeners entered the lists, and out of the twenty-nine eligible competitors who had fulfilled the conditions of the programme, the judges, on the 1st of May 1867, decreed the first prize for designs to M. Ed. André, the chief landscape-gardener of Paris, and to Mr. Hornblower, architect, of Liverpool, who were partners in the contest. The second prize was won by Mr. Milner, landscape-gardener, of Sydenham.

M. Ed. André and Hornblower were entrusted with the execution of the works, with a commission of five per cent., and on the 6th of June 1867 their terms were accepted. The estimates, which were at first laid at £85,000, ultimately swelled to the sum of £100,000, in consequence of the purchase of more ground from Mr. Livingstone for £12,000. Certain badly-disposed persons (for the most part unsuccessful competitors) did not scruple to find fault with this increase in the estimates, without appearing to have considered that it arose solely from the addition which was made to the park by the purchase of fresh ground subsequently to the estimate which was made in the first instance. Afterwards, other works, sanctioned by the Improvement Committee of Liverpool, and occasioned by unforeseen difficulties in carrying out the original design, raised the total expenditure to a sum which will probably be about £140,000, but it is nevertheless true that the original estimates of M. Ed. André and Hornblower would never have been exceeded had it not been for these unforeseen complications.

Of the total area of the park (independent of a certain space reserved for building lots, which will be sold and recoup a great part of the outlay), about thirty acres are set apart as an exercising ground for the Lancashire Volunteers and the Militia; the ornamental waters occupy more than twelve acres; a large proportion is devoted to "cricket," eight or ten matches of which may be played at the same time, and the rest of the space is occupied by the lawns, plantations, turf slopes, roads, walks, and ornamental accessories of various kinds. Among the vast interior and exterior thoroughfares of the park, it was resolved upon to establish a second "Rotten-Row," on the model of the fashionable resort in Hyde Park, and, accordingly, the dainty dames and knights of Liverpool may now enjoy to the full the pleasures of equestrian excite-



ment from Ullet Road to Garston Entrance. The distance is a mile and a half, and as there is a similar route within the park on the same side, the ride may be extended to three miles.

The designers, not losing sight of the necessity of providing long promenades in the park, and to make them as varied as possible, have made walks in every direction in which a visitor may have an agreeable view. The carriage roads alone are more than ten miles in length, and are all macadamized with broken granite, levelled by the powerful steam-rollers of the Corporation, and covered with a layer of fine gravel, over which the steam-rollers have also passed, and this affords a perfectly even surface even for pedestrians. The walks are formed of stone, cinders, and a layer of yellow Jersey gravel, and they have been made so as to conduct the visitor to every point of view that presents any attraction; they are generally ten feet wide, while the carriage roads vary in width from thirty to seventy feet.

One of the chief characteristics of the park is the lake and the general arrangement of the ornamental waters, which occupy a large area. As we have previously stated, the ground is divided by two valleys. Where the larger valley entered the park from the adjacent fields, the great circular road formed a natural intersection. The designers took advantage of this to form a wide slope here, in the side of which has been constructed a picturesque grotto of considerable size, out of which issues the stream, whose capricious meanderings follow the windings of the valley, its course being continually changed by a series of rocky barriers, until it finally flows into the lake. The drainage of the park from all points falls into this stream, and is of itself almost sufficient to feed it.

The other valley, which is shorter, more confined, and also more winding in its course, lies between steep slopes studded with rocks. At one end there is a cascade of great size, and the entire bed of the stream is thickly set with blocks of stone, which, like those used in forming the great cascade and the grotto, consist of the natural stone of the district—the red sandstone of Liverpool. All these stone constructions are the work of M. Combaz, the eminent architect who has built the Cascade de Longchamps, at Paris, and has constructed similar works in the Bois de Boulogne, the Bois de Vincennes, and in the squares of Paris. The lake, which covers more than ten acres, is sufficiently large for sailing and rowing matches. Its bed has been excavated out of the rock, and its margin has been laid out so as to present a varied succession of graceful windings and bold projections.

The plantations in general, and those on the margin of the lake in particular, have been the object of M. André's most careful attention. In one part of the park he has planted forest trees in broad groups and long shady rows, affording a solid screen to shelter the choice trees inside, which could not withstand the violent winds so prevalent at Liverpool. Outside of the wooded part on the south side, consisting of groups of more than ten acres together, through which here and there some vistas have been cut, the rest of the groups have been disposed, as may be seen in the annexed plan, so as to enclose the chief points of view and to form a series of plans which compose the scenes of the entire landscape. It may be observed that the park had to be entirely planted, as previously it did not contain a single group of trees, and that the soil was purely that of arable land. If, on the one hand, this absence of trees left the designer full scope for the exercise of his taste in forming the plantations, on the other hand, it was necessary to cover this bareness by planting strong trees, which were removed by the thousand to Sefton Park from Lord Sefton's property at Toxteth.

An idea may be formed of the extent of the plantations when it is stated that more than 200,000 trees have been employed. The expectations of M. André, as to the result of these groups in forming a shelter, have been already realized, and the success of the plan has exceeded all hope. In fact, on the day of the inauguration of the park by Prince Arthur (the 20th of last May), we saw the trees and shrubs, on the effect of which we had not reckoned for ten years to come, in a most satisfactory condition, and in two or three years more the park will be well furnished, its thirty-two acres of groups having been then only five or six years planted. The expenses

for the sewers, the drainage, the roads, and the addition of clay to certain parts where the soil was too sandy, have been very heavy, but the success of the plantations has been remarkable, the roads are unquestionably good and solid, and the drainage of the entire park is perfect. It was necessary, not only to carry out the plantations and all the requisite ground works, but also to enclose the park. Three patterns of railings, supported on a base-work of stone, were adopted, the plainest forming the boundary of the building-lots on the outside of the circular road, while the others enclose the park on the inside, and contain the necessary number of gates. The gate-houses for the park-keepers, and certain ornamental buildings have not yet been erected, and their construction must be a gradual work, lest the good people of Liverpool should grumble at such heavy expenses coming so closely one upon another.

It has been determined to have a botanic garden in the park, and this will supersede the old botanic garden of Liverpool, which the smoke of the town and the exhaustion of the soil have hindered from prospering. Up to the present it has not been commenced, but there is every reason to hope that the project will be carried out as designed.

The foregoing is a rapid sketch of the great new park at Liverpool. We do not know what judgment posterity will pass on those who have designed it, or on its value as showing what may be effected in the way of landscape gardening, but we do know that it was an immense undertaking, entailing long and careful study and laborious operations, and we believe it to be well worthy of the attention of all who take an interest in the art of gardening.

THE PLANT NURSERY OF PARIS.

THE projected removal of this is strongly denounced by M. Carrière. The ostensible grounds which have been advanced for pulling down this old and well-known establishment (the nursery and propagating-house of the plants which are employed in embellishing the squares of Paris), namely, to afford space for the continuation of the Rue Spontini and the Boulevard Flandrin, he considers to be a mere pretext, veiling the designs of private speculators, who are eager to secure the ground for building purposes. He goes even farther than this, and speaks of it as a well-known fact that these gentlemen actually have the plan of the prospective building-lots drawn out and ready. No doubt the value of the ground as a site for dwelling-houses would be vastly increased, but the advantages which would accrue to the city from the continuation of the street and the boulevard, would be more than counterbalanced by the removal of the Fleuriste to such a distance as is proposed, viz., "The Parc des Princes, between Boulogne and the Point du Jour." The transport of the plants to the city from this distant point would involve permanent labour, trouble, expense, and loss of time, while the plants could not be expected to arrive in the best condition after their long journey. In addition to this, the re-erection of the edifice itself would entail no inconsiderable outlay, as much of the iron-work, which, as it stands at present, would hold good for years to come, would have to be replaced by new material in the new building, so that, on the whole, the loss, even in a pecuniary point of view, is a matter not to be overlooked. The protest of M. Carrière appears to us to be both reasonable and well-founded, and we believe that the people of Paris will have good cause to lament if the proposed relegation of the Fleuriste be carried into effect.

THE FLORIST.

THERE is my friend the weaver; strong desires
Reign in his breast; 'tis beauty he admires.

* * * * *

For him is blooming in its rich array,
The glorious flower which bore the palm away.
In vain a rival tried his utmost art,
His was the prize, and joy o'erflowed his heart.
'This, this is beauty! cast, I pray, your eyes
On this my glory! see the grace—the size
Was ever stem so tall, so stont, so strong,
Exact in breadth, in just proportion long?
These brilliant hues are all distinct and clean,
No kindred taint, no blending streaks between;
This is no shaded, run-off, pin-eyed thing,
A king of flowers, a flower for England's king!'

—Crabbe.

THE ARBORETUM.

HARDY TREES AND SHRUBS.

BY GEORGE GORDON, A.L.S.

CELS'S LARGE-FRUITED THORN (*CRATEGUS CELSIANA*).

THIS very distinct thorn forms a robust, free-growing tree, from fifteen to twenty feet high, with rather a spreading head, stout branches, and downy spineless shoots, and when covered with its fine compact heads of large flowers in June, and its large oval yellow fruit in the autumn, it makes a fine display. It is a native of Sicily, where it grows on mountains, and was first introduced in 1816. It is one of the latest of all thorns in leafing and fruiting. The leaves are large, ovate-acute, deeply incised, and taper much to the foot-stalk; when fully matured, they are of a deep glossy green above, downy beneath, and on rather long stalks; the lobes are oblong-acute, regularly and acutely toothed on the outer edge and near the apex, and increase in size from the point to the base of the leaf. The stipules are small and acute, but frequently wanting. The flowers are large, pure white, very fragrant, and produced in close heads in June. The fruit is large, oval, downy, of a yellow colour, and ripens



Leaf of Cels's large-fruited Thorn; natural size, $2\frac{1}{2}$ inches broad and $3\frac{1}{2}$ inches long, including the footstalk.

at the end of August, but it hangs on the tree until the leaves fall off. This kind of thorn must not be confounded with the *Crataegus oxyacantha celsiana*, which is a mere variety of the common hawthorn. Its synonyms are *Crataegus incisa* and *Leeana*, and *Mespilus celsiana* and *laciniata*.

THE SHRUBBY REST-HARROW (*ONONIS FRUTICOSA*).

AN ornamental small bushy shrub, which grows from two to three feet high and flowers abundantly in May and June. It is well suited for planting on rockwork, or in the front of shrubberies, as it thrives well in any open situation and soil that is tolerably dry. It is a native of the south of France, where it grows in sunny places, especially on the Alps of Dauphny and Provence. It is readily increased by means of seeds; it was first introduced in 1680. The leaves are alternate, trifoliate, and deciduous, with the leaflets lanceolate, serrated, and without footstalks. The stipules are joined in one, forming a sheath, with four long bristly points, which in the uppermost part of the plant occupy the place of leaves. The flowers are pea-shaped, tolerably large, and of a purplish-red colour. The pedicels are three-flowered, disposed in a raceme rising from the axil of the leaves. The pods are puffed up, few-seeded, and brown when ripe in September.

VARIETIES OF THE COMMON LAUREL.

LET us advert in the first place to the forms most nearly related to the common Cherry Laurel (*Cerasus Laurocerasus*)—itself too well known to need more than a passing reference. Of these the most prominent is the Versailles Laurel (*latifolia*), a very large-leaved kind, differing only in size from the common sort. When first introduced at the meetings of the Floral Committee a year or two since, a very proper doubt was entertained as to whether or not this extra size might be merely the result of special culture, but we have since seen it at the Tunbridge Wells Nurseries growing freely by the side of the common laurel, and maintaining a decided difference, both as to robustness of habit and boldness of foliage. Whether it is more or less tender than the type, which, we all know to our regret, sometimes gets severely touched by frost, we are not aware. Another variety, also closely related to the common laurel, is the round-leaved laurel (*rotundifolia*), which has been exhibited by Mr. W. Paul, and which we have noticed growing in his nursery at Loughton, in a situation where its hardiness was thoroughly tested. The habit of this sort is very dense; the leaves, though not exactly round, are particularly broad and short, and are serrated at the edge, and the whole plant appears to us to have an aspect recalling that of a bay laurel rather than a cherry laurel. We look upon this as one of the best of the forms belonging to the same race as the common laurel, while a narrow-leaved form, occasionally seen, is one of the worst from an ornamental point of view. Of a distinct and hardier type is what is known as the Colchican Laurel (*colchica*). One of its peculiarities is its remarkably spreading habit of growth, without much tendency to get upwards, a quality which seems to adapt it specially for planting as undergrowth or cover. Another of its peculiarities is the pale hne of the back of the leaf, which somewhat detracts from its beauty as an evergreen. The leaves are rather lengthened out, conspicuously pointed and glossy, and have a sort of refined character, which no doubt would command the approval of most persons of taste in these matters. It is, undoubtedly, a better evergreen than the common laurel. The Caucasian Laurel (*caucasica*) is again of another distinct type, and, so far as we have been able to observe, is the most valuable of all the Cherry Laurels we have in cultivation. It has a bolder and more vigorous style of growth than the common laurel, is naturally much more inclined to assume an erect habit of growth than *colchica*, and is, at the same time, dense and well furnished, thickly clothed with fine, broad, dark green glossy foliage. What is, however, of still more importance, in regard to an estimate of its merits, is the fact that it is hardier than any of the other varieties. The Cherry Laurel is so often and so much in request as a shrubby plant, that we trust our readers will find these brief memoranda of the peculiarities of the different kinds useful to them in making their selections, now that the planting season has again come round.—*Gardeners' Chronicle*.

The Weeping Willow.—This, says the *New York Tablet*, has a romantic story. The first scion was sent from Smyrna in a box of figs to Alexander Pope. General Clinton brought a shoot from Pope's tree to America, in the time of the Revolution, which, passing into the hands of John Parke Curtis, was planted on his estate in Virginia, thus becoming the progenitor of the weeping willow in America.

The Parliament Oak.—"Edward I. held a great council under the shade of an immense oak, the well-guarded trunk of which is yet standing, at the corner of Clipston Park, on the side of the road between Mansfield and Edwinstowe, and is famous through all the country-side as 'Parliament Oak.' This event is dated by historians in 1290, as consequent on some information the king received, while hunting in the forest, of a revolt of the newly-conquered Welsh, against whom he immediately proceeded."—*Spencer T. Hall's "Forester's Offering."*

A Monster Tree.—In Major Bell's "Other Countries" (Chapman and Hall) we read of "the greatest tree in the world" growing near Hobart Town. Yet were no means of arriving at its precise dimensions. But, pacing it round its base, Major Bell measured thirty-one yards, and "bleached and branchless till near the top, its huge stem disengaging itself from its base of roots, rises in a girth of eighty feet, from roots that overtopped the boy who guided me, and perhaps were five feet in height." He has some reason for surmising that this Tasmanian monster may hold its own even with the world-renowned giants of the Californian forests.

Viburnum plicatum tomentosum.—This variety, which, according to M. Carrière, in other respects, is almost precisely similar to *V. plicatum*, differs from it in its flowers and comparative hardiness. In the last respect it falls far short of *V. plicatum*, as it perishes under a few degrees of frost, while *V. plicatum* is not sensibly affected by the most intense cold. The flowers are very like those of *V. Opulus*; those at the circumference of the umbel are simple, five or six in number, and form a very elegant collar or crown encircling the central flowers, which are very small. In a cool house it blooms about the 20th of April, and in the open air early in May.

OUR SQUARES.

AMONG other good things, says the *Telegraph*, which the Arab proverb enjoins us to do that we may make sure of entrance into Paradise, is the planting of a tree. Leigh Hunt, than whom no truer lover or more refined appreciator of nature ever lived, used to boast that whenever his domiciliary circumstances permitted, he strictly carried out the behests of the Eastern sage. But if the planter of a lime or a plane tree is deserving of hearty praise, what, it may be asked, should be the meed of eulogy bestowed on him who endows his contemporaries with a new garden? That those who are blest by fortune with adequate means, should in such a manner earn the gratitude of their fellow creatures, is, from every point of view, beautifully appropriate. The best and the wisest men that have ever lived have been the greatest lovers of gardens. One of Bacon's most eloquent essays is on gardening; and, as Evelyn did after him, he wrote learnedly and enthusiastically on arboriculture. The germs of the Renaissance of Italian art blossomed in the gardens of Lorenzo de Medici; and two of the noblest of English poets, Milton and Spenser, have in their writings shown themselves as proficient in horticultural lore as Virgil approved himself in husbandry. Practical country gentlemen, and even botanists, may yet learn something from the deathless word-picture of the Wandering Wood; and that the grandest and subtlest human minds should thus take delight in sylvan scenes and flowery pleasantries is meet when we remember that it was in a garden, when time was young and sin was not, that the Almighty bade his creatures be happy.

When a foreigner comes among us and we strive to guide his footsteps through the mazes of this enormous capital, he may at the first blush imagine that of all cities in Europe, London is one of the most richly gifted with gardens. He may be justified, indeed, in such an assumption when he listens to our own pardonably complacent encomiums on St. James's and the Green, on Hyde and the Regent's, on Battersea and Victoria parks, and on the exquisitely beautiful Kensington Gardens—all wonderfully developed and improved, and some of them created, within the last twenty years. But our parks, he may think, are not our only pleasure grounds; nor even when he has been taken to Hampstead Heath and to Primrose Hill, and to the coquettish little *bosquets* which are springing up on the Thames Embankment, may he consider our catalogue of places of public recreation to be exhausted. Peeping through a gilt and armoured *grille* in the Kensington high road, he may have seen the noble avenue of antique trees which leads to Holland House. Again, in pleased wonder may he lift his hands as a river steamer bears him past the velvet meads and spangled pastures at the rear of those old Inns of Court where once the Knights of the Temple dwelt, "ere they decayed through pride." Once more, crossing Berkeley Square, may he find himself in a very grove, with the towering elms and oaks of the square itself on one side, and the venerable gardens of Chesterfield and Lansdowne houses on the other. Grosvenor, Russell, Belgrave, and a score more West End squares will alike please his eye; and especially will his curiosity be gratified by the sight of the enclosure of Lincoln's Inn Fields, an earthly paradise of umbrageous luxuriance, in which all Mr. Morris's story-tellers might tell their tales till London falls to pieces and the New Zealander comes to sketch it. Of what, then, our critic from abroad may ask us, have we to complain? What is Paris, with its Tuileries and Luxembourg gardens, its Park Monceaux and its Square Montholon? What is Florence, with its Boboli and its Cascine? What are Vienna, with its Volksgarten and its Prater, and Rome, with its Pincio and Borghesi gardens, in comparison with London? And have we not the Royal Horticultural, the Botanic, and the Zoological gardens? Yes, we are fain to plead guilty to all these pleasant indictments; yet are we bound sadly to confess that in this city of four millions of inhabitants we have not half enough gardens for the gratuitous and unrestricted enjoyment of the people. For admission to some of our sylvan retreats a money payment is required; the public are only admitted by favour to the Templars' lawns; and the squares, being strictly private property, the privilege of wandering in their grassy and shady enclosures is reserved for the inhabitants of the surrounding houses and others possessing the power of the "key." In front of Carlton House Terrace, again, there are some very pretty gardens, on which the members of the Athenæum, the Travellers', and the Reform clubs may only look from their windows. The barring out of the public from Lincoln's Inn Fields seems a still harsher arrangement. Benchers' orders, it is to be presumed, admit a favoured few to the leafy thickets of one of the most antique and picturesque expanses in the metropolis; yet it is a sad sight to see, on broiling summer afternoons, tired children and weary nursemaids, with perambulators, looking wistfully through the railings of the "Fields," and contemplating the far-off Eden from which they are banished. Who will give a new and an eleemosynary garden in which the studious may saunter and children may play? The appeal comes from the inmost depths of the popular heart, and

it is gratifying to find that to such a request one most generous response has just been made. The Marquis of Westminster has determined (see p. 88) to try the experiment of providing an open garden for the use of the public.

As regards the advisability of removing or retaining railings, opinions may differ. It should, however, be enough to know that the gates will be thrown open from sunrise to dusk, and that the poorest portion of the community will have free right of entry into the new pleasaunce. No praise can be too warm in acknowledgment of this generosity; the step is as wise as it is munificent. Lord Westminster has struck a keynote to which harmonious reply must speedily follow. That the rights of property should be scrupulously respected is, in this country of reverence for law, a necessity and it is equally imperative that there should be no wanton violation of the privacy and seclusion for which the householders in a London square virtually pay when they disburse their quarter's rent. It would be impossible, under present circumstances, to throw open all the metropolitan squares to the public at large; still there are many which are under the entire control of noble proprietors, and there are others which have long since lost the aristocratic stamp they once possessed, and which, being now situated in populous and indigent neighbourhoods, might be most beneficially utilised as places of popular recreation. What body of householders, for example, would take any harm if Soho, Red Lion, and Golden squares, and, in particular, if Lincoln's Inn Fields, were thrown open as playgrounds for the people? The example set by the Marquis of Westminster will, we are convinced, bear good and speedy fruit. The landlords of the virtually unused spaces have everything to gain and nothing to lose by adopting a policy of liberality; while to the public the advantage derived from the concession would be of a double nature. Our parks are numerous, but they are in most cases too far removed from densely crowded neighbourhoods. That children or their elders would misconduct themselves in gardens set apart for their use is a contingency not to be entertained by rational minds. Every additional garden thrown open is a lesson and incentive to the poor to comport themselves with propriety. Already they do so in the few gardens they possess, and their decorous bearing would, we are persuaded, be increased in a proportionate degree were the parks, the gardens, and the playgrounds of London multiplied a hundredfold.

PARK BATHS.

AGAIN the "heated term" has set in, and once more is seen the disgraceful state of the bathing arrangements in Hyde and other parks. There is no city in the world in which a series of convenient open-air swimming baths could be so economically made as in London. Abundance of wide-spreading park and garden ground belonging to the public is at hand in which capital sites occur. Our parks are not, like those of Paris, without the city, but for the most part quite surrounded by it, so that swimming places in them would be most convenient for the inhabitants of the surrounding districts. Consider, for example, what a boon one or more small swimming lakes in Regent's Park would prove to the many densely-inhabited districts around it. The land in the possession of the public, the excavation and proper shielding of such by belts of varied plantation would be quite easy and inexpensive. Something like a model for an open-air swimming bath already exists in Victoria Park. Such baths once formed would entail little or no expense for keeping more than would be bestowed on the same piece of ground if kept as a park or garden. Shrouded by shrubbery, they could be used for fourteen hours of the summer day, while, if their disposition were entrusted to a good landscape gardener, they and their surroundings could be made charming embellishments of our parks, now in many parts naked and unattractive. It is needless to point out how beneficial such a series of baths would prove to the population of London, by placing within reach of all the means of practising in the open air, and in the pleasantest manner, the doubly useful exercise of swimming. They would be worth constructing merely for the sake of getting rid of the wonderfully scandalous spectacles which may now be seen every morning and evening on the banks of the Serpentine. Here the army of the great unwashed is so densely packed, that none but the roughest and those with the least-developed sensibilities could enter the water; and, indeed, it is not quite pleasant to go near the margin when the crowd is away, for the authorities make no sanitary provision whatever for the great multitude, and the place is filthy to a degree not pleasant to see illustrated within a few hundred feet of the most fashionable lounge and drive in Europe, and in our most popular and expensively embellished public garden.—*Field*.— [The suggestion alluded to last week, as to bathing places in the centre of islands in such a piece of water as the Serpentine, is a capital one which we hope to see acted upon. More convenient, if not so picturesque, would be little bays opening from the main sheet of water and surrounded by dense plantations.—ED. GARDEN.]

WE hear that a farmer has refused to buy a sewing-machine on the ground that "he sowed his wheat out of a bucket."

GARDEN DESTROYERS.

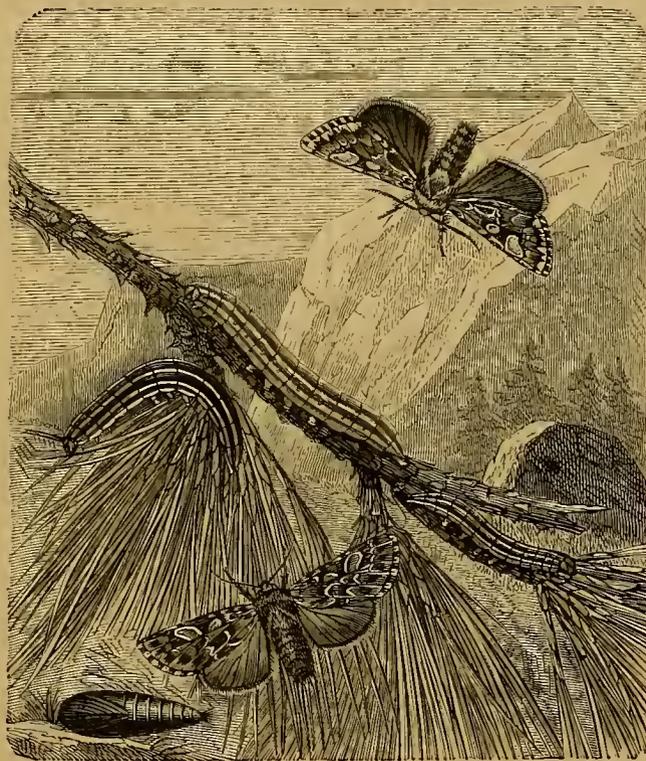
NOCTUA (TRACHEA) PINIPERDA.

ANOTHER moth which, although not so formidable as some of its congeners, still, from time to time, causes considerable injury to pine trees, is the *Noctua piniperda* of old authors. The accompanying woodcut shows the caterpillar in its different stages—the chrysalis, and the male and female moth, all of the size of nature; the upper figure, with serrated antennæ, being the male, and the lower, with filiform antennæ, the female. The caterpillar is grass-green, with white stripes and an orange-yellow one along the line of spiracles, the lateral stripe is margined with a delicate black streak, and small black dots are scattered over the body; the underside is paler than the upper, and the head is pale brown.

The chrysalis is reddish brown; that of the male is smaller and harder than the female, and has a small elevation on its back. The moth is variegated with brown, grey, yellow, orange, and red; the outer margin of the upper wing is pale yellow, with eight red spots running along it; the darker parts in the figure are reddish-brown, the paler yellow or orange; the thorax is variegated with red, orange, and light grey or white; the abdomen is brown, turning reddish towards the tip; the effect of the whole being a mixture of colour wonderfully like the bark of the fir tree, on which it rests. The caterpillar feeds on the leaves of the pine tree, and is said by Kollar to prefer trees of from fifty to a hundred years old, and only to attack young trees and young shoots when it cannot get older ones.

The moth appears in spring, but the date of its appearance varies according to the weather. If it has been very warm and genial it may come out in April, or even in March; if the season has been backward it may not appear until May or June. It sits by day on the trunk of the tree, generally pretty high up, and from its similarity to the bark in colour is not readily observed. The female lays from forty to sixty eggs, of a pale green colour, singly on the points of the foliage. After the lapse of about fourteen days, the young caterpillars are hatched, and they begin eating at the point of the leaf and work backwards to its base. They live singly, and continue feeding for six or seven weeks (changing their skins several times), and about the middle or end of July or beginning of August, they pass into the chrysalis state in the earth or moss at the roots of the trees. They do not readily crawl along the trunk, but let themselves down the trees by a thread. They remain in the pupa stage all the winter, thus producing only one brood in the year.

No special remedies for, or protection against, this species have been proposed. The same that are used against other moths apply also to it; but a considerable number of ichneumons seem to be specially appointed to keep it within bounds. Eleven or twelve species are mentioned by Ratzeburg as particularly fatal to it. It is fortunate that the insect, in all its stages, is very susceptible to changes of weather, which often destroys many.



Noctua piniperda.

It is found both in England and Scotland in most pine woods, but we have not met with any notice of its occurrence in Ireland. A. M.

THE NEW VINE PEST.

WITHIN the last few years a new plague has, in the south of France, excited even more alarm than the oidium itself, from its insidious invasion and complete destruction of many of the most valuable vineyards. The germs of the potato-fungus, of the péhrine, of the oidium, are all invisible and inappreciable by any of our instruments; the history of their diffusion and early development, and even their very existence, can only be judged of from their results and other circumstantial evidence; whilst the *Phylloxera vastatrix* can be watched in every stage of its varied existence, from the first deposit of the fertilised eggs, through its several agamic generations, to the latest winged form. The researches, accordingly, which have been already applied to it have not been altogether barren of results, (throwing some light even generally upon the origin and dispersion of these pests. Considerable sums of money, either from the French Government or from private subscriptions, have been applied to the purpose, and the investigation has been chiefly carried on by Dr. J. E. Planchon, of Montpellier, assisted by M. J. Lichtenstein, a relative, I believe, of the late distinguished Prussian zoologist. These gentlemen, since the first discovery of the disease in France in 1868, have devoted much of their time to it. They have compared their observations with those of others who, in other countries, have studied the insect, especially M. Laliman, of Bordeaux, Mr. Riley, of Missouri, and with those of Professor Westwood in our own country; and they have now, in a pamphlet which, by some inversion of dates not uncommon abroad, is supposed to form part of the proceedings of the session of the French scientific congress at Montpellier in 1868, given a *résumé* of nearly five hundred memoirs, communications, or journal articles which have been published on the subject up to the close of last year (1871).

The main facts given as having been hitherto elicited as proved or probable may be shortly resumed as follows:—

The *Phylloxera*, like other aphides, goes through a number of apterous generations of a single sex, but multiplying with enormous rapidity; one or two individuals will lay as many as five hundred eggs, fertilised without previous copulation. It also gives birth occasionally to a winged generation of both sexes, the females of which lay only two or three eggs each. The apterous *Phylloxera* is also dimorphous, a smooth-bodied form living in little galls formed on the leaves of the vine, where it is comparatively harmless; and a tuberculate form living in the nodules it produces on the root fibres, causing first the smaller and then the main roots to rot, weakening, in the first instance, and finally killing the whole vine. Each form has its winged generation. The insect is evidently of North American origin, although the precise history of its transmission to this country has not been ascertained. It was first described by Asa Fitch in the *Transactions of the New York State Agricultural Society* for 1854; but living there chiefly on the leaves of the native vines, it had not attracted any peculiar attention. More recently, however, Mr. Riley has found reason to attribute to the ravages of the subterranean form the ill success of the various attempts made to establish in America the European grape-vine. In England, where the introduction of the insect from America may be readily conceived, Professor Westwood's attention was first called to it in 1863, and again from various quarters in 1867 and 1868. With us it does

not appear to have spread much, and has therefore not called for any further observation, the damp soil, the mode of treatment, or other external circumstances, proving unfavourable to the development of the underground form. But having by some means reached and established itself in the dry, naturally-drained vineyards of the south of France, its general character underwent a change; natural selection at once gave an enormous preponderance to the underground over the epiphyllous form. It was first discovered there in July 1868, and by the close of that year its ravages caused a panic among the vine-growers in many parts of Lower Languedoc and Provence, similar to that which we may remember in this country on the rapid spread of the potato disease in the autumn of 1845. It was immediately made the subject of scientific investigation, which has ever since been steadily pursued. As one result Dr. Planchon inclines to believe that the oidium and the potato disease, like the Phylloxera, and, in former days, the American blight of our apple trees, had all been imported from America. It would seem that all these parasites, whether insects or fungi, capable of enormously rapid and extensive propagation, remain unnoticed so long as they are kept in check by the mutual relations of their constitution, habits, food, and other circumstances in which they are placed; but that the moment that a change, often very slight, in one or other of these conditions destroys the balance, they may at once and suddenly gain the upper hand, so as to be classed in the popular mind amongst those varied phenomena collectively designed as blights. That such a change is often the consequence of the transportation of the insect from one country to another may be regarded as more probable if Riley is correct in his belief that in America, as in Europe, introduced insects, when once established, are more noxious than indigenous ones. In the case of the Phylloxera some clue to the nature of the influencing alteration may be derived from the success attending one of the remedies applied, the inundation and continued submersion of the diseased vineyards during the winter months. The comparative dryness of the soil in the new over that of the original station of the insect has been the change which natural selection seems to have seized upon to effect the extraordinary development of the underground form, aided, perhaps, by some slight attendant change in its constitution. Prolonged, or even temporary inundation, is not, however, practicable in the majority of the South of France vineyards, nor, indeed, in any of those producing the best wines. Amongst other remedies, soot (the soot of wood-smoke I presume) promises to be one of the most efficacious applications.—*From Mr. Benthams's Address at the Linnæan Society.*

MARKET GARDENS ROUND LONDON.

BY OUR SPECIAL REPORTER.

MR. GEORGE STEEL'S, PARSON'S GREEN, FULHAM.

THE immense importance of the London market gardens, and the usually high culture maintained in them, are known to many; but few have any opportunity of observing for themselves the details of the management pursued in them. One of the most exemplary of these establishments is that of Mr. George Steel, of Fulham, whose system of cropping and vegetable culture is of the most satisfactory character. The Fulham fields have a world-wide reputation for vegetable production, and a visit to them just now could not possibly be unprofitable, or without interest even to those not directly concerned in market gardening; for growers for market do not, like the great majority of private cultivators, grow everything they think edible. On the contrary, they only grow such things as suit their particular description of land best, and which return the greatest amount of profit. In some districts, Peas, Beans, and Potatoes form the main crops, but these are often many miles distant from London, where land is comparatively cheap, and where the growers can better afford to raise them than those about London, where, sometimes, the Pea crop itself scarcely re-pays its expenses. The wholesale vegetable markets are held early in the mornings, and the same waggons which convey produce to town over-night, take back stable dung in the morning, thus accumulating great masses of manure, all of which is used, in due time, for the land. Nor do market gardeners spare it, for on a liberal supply of this great essential do they depend for good crops.

ASPARAGUS.

This may be taken as the most important of market-garden vegetables; it is now left to itself, and is growing away quite strongly. It is planted in single lines about seven feet apart,

and when in double lines placed about two feet or so apart, a space of eight feet is left between these and the next two rows. The French are partial to blanched Asparagus; they say that in cooking, English people spoil the "grass," and that they affirm green shoots are best. The English certainly often give the preference to unblanched produce. Green Asparagus will not, however, sell even in the English market, consequently market-gardeners, in order to meet the demand, grow it in the way that suits the purchaser best. About the end of February or first of March, the soil in the spaces between the lines or rows is thrown right and left on the rows to the depth of several inches, thus forming high ridges with deep trenches between them. By the middle of April, if the season is warm, the young shoots begin to make their appearance. Then, as soon as the weather permits, a line of French Beans is sown along the middle of the ridges having only one line of Asparagus; but in the larger ones, containing two rows, three lines of French Beans are sown; these are now producing a crop. About the middle of June cutting of Asparagus is entirely discontinued, and the plants are allowed to grow at freedom. Just now, however, three lines of Coleworts are being planted in the trenches; the plants being large when inserted, are set about eighteen inches apart.

CABBAGE.

The Fulham or Enfield Market is the kind usually grown in market gardens. Sowings are made at various seasons throughout the spring, summer, and early autumn, not only for supplying hearted Cabbages, but also for Coleworts, which are young Cabbages before they begin to heart. Main crops are planted in early spring from twelve to fifteen inches apart each way; and as they begin to meet one another in the rows, every alternate row is removed for Coleworts, also every alternate plant in the row; the others are left to form hearts. During the cutting season, some of the finest Cabbages have pegs stuck in beside them to mark them. The heads of these are sold, but the stumps are retained for seed. In summer, Cabbages are only used as an intermediate crop, *i. e.*, they are planted between Moss Roses, beds of Asparagus, or in other places where other crops would not be likely to thrive. Seed for this purpose is sown early in summer in any corner that is to spare, and likewise between lines of spring-transplanted fruit-tree stocks for grafting on. For planting, good-sized plants are preferred to small ones, as being more likely to withstand warm summer weather. Advantage, however, is taken of showery weather for planting, if practicable. A line is now being planted along the centre of the space left between the Celery rows, in which the plants stand eighteen inches apart.

CAULIFLOWERS.

These form one of the principal spring crops. The plants are raised in frames in autumn, just protected from snow, hail, frost, &c., throughout the winter, and are planted out in February. They are not, however, kept altogether free from frost, but the less they get of it the better. When planted out eight or nine are placed under a handlight, which, if necessary, is covered over with litter during severe weather. As the plants advance, a few are lifted out, and either placed under other handlights, or are planted in lines three feet apart. Three or four is the quantity usually left under each light, and to them a little earth is drawn, thus forming as it were, a little basin, which is suitable for the retention of manure water, if time can be spared for its administration. Throughout the day, as the spring advances, the lights are either entirely removed or tilted up a little, and no sooner can the plants do entirely without protection than they are removed from them, and are next used for Vegetable Marrows. The second main crop is planted out in lines two and a half feet apart, and the space between is made up with Lettuces, which are ready for market some time before the Cauliflowers. This crop forms a fine succession to the other, and is succeeded by other later plantings, which are either put in in open spaces, and made up with other crops between, or they themselves are planted as intermediate crops between Cabbages. By the end of June all the Cauliflowers are removed and sold, so no time is lost. The main point of success, however, depends upon a free use of the hoe, and this the market gardener never neglects. In private gardens hoes are mostly employed to keep down weeds, but in market

gardens they are not only used for that purpose, but for pulverizing the soil, a practice which rapidly promotes the healthy development of the plants.

CELERY.

In the Fulham fields Celery does remarkably well. The plants are raised in frames having a little bottom heat, and are gradually hardened off until, before they are finally removed from the frames, the sashes are entirely removed from them. After being well exposed in the frames, about the middle of May they are dibbled out in the open ground in lines six inches apart and three inches from plant to plant, and between every nine lines thus planted an alley of eighteen inches is left; or they are planted out in lines nine inches apart, four inches asunder, and no alley left. They are thus allowed to remain until the end of June, when a good plantation is made, and the main crop is just now (last fortnight of July) being put in. All empty ground is now dug over and marked off into five feet spaces by a drill or mark being made across the ground. This drill for the earlier crops is hollowed out a few inches, thus forming four-foot beds and one-foot alleys. In these alleys the Celery is planted about eight or nine inches apart. For the later main crop, the alley is not taken out quite so deep; it just appears a little lower than the main surface. The space, or four-foot bed between the Celery lines is planted with a line of Cabbages along the centre about eighteen inches apart, and on both sides of this row, a row of Cos Lettuces is planted. In dry weather this crop is liberally supplied with water, but as yet this season, there has been no necessity for artificial watering; should water, however, become necessary good means are at hand for supplying it; trenches are dug out from the banks of the Thames across the fields, and owing to the land being level these trenches become filled on the rise of the tide, thus facilitating the watering of this and other crops. The earlier planted crops are supplied with a little soil by breaking down the sides of the ridges with a hoe. The Lettuces planted between them will, by the time the Celery requires a good earthing up, be ready for market, and are removed.

CARROTS.

These are treated like Onions, the Early Short Horn being the kind used. These are sown along with Lettuces, which germinate a good deal sooner than the Carrots; therefore as they come up, they are thinned, and as they become strong enough, are planted out, leaving the Carrots behind, which, while among the Lettuces get a little weak, but after removal of the Lettuces soon recover. Protection from frosts, cold, and heavy rains, &c., is given by means of sashes and coverings of litter. As soon as the Carrots are removed, a crop of French Beans is sown in the frames, from which the earliest supply is obtained.

CUCUMBERS.

Some idea of the quantity of Cucumbers grown in Mr. Steel's grounds may be obtained from the fact that he has 800 three-foot wide frames all occupied with them, and last week he sent to market about two hundred dozen good Cucumbers. They have the constant care of two men, who do little else besides attending to them. The young plants are raised in dung-beds and are potted off when ready, two being put in a six-inch pot. Two or three sowings are made according to the space that can be got ready for them, for it must be borne in mind that not only ground, but frames have to be got ready for them, and the latter in spring are filled with young Lettuces, Carrots, Onions, and Cauliflowers. In the end of March or first of April trenches are dug out four feet wide and two deep. These trenches are filled with fermenting manure, which is covered over with the soil that was taken out of the trench. The frames and sashes are then put on and the plants planted, there being two plants in each pot; these are allowed to remain together when planted, so that one potful is inserted in the centre of the bed under each light; one plant is trained towards the top and the other towards the bottom of the frame. For several weeks after being planted they are protected at night from cold by covering the sashes with litter, which is removed next morning. This has been discontinued for two months now, as the nights are warm enough for them to do without covering. Throughout the day they are allowed to have plenty of air, which is all taken off at night; as soon as

the men come in the morning they tilt up the sashes a little and if the heat of the day greatly increases the sashes are tilted up a little higher still, usually about three inches. Watering is performed in the morning, and is given abundantly to those requiring it, whilst those that are not dry have simply a sprinkling overhead. Shading is entirely dispensed with now, but in the event of strong sunshine it would again be resorted to. Cucumbers are gone over twice every week, for the purpose of removing all superfluous shoots and leaves. The shoots are pinched when quite young at the joint beyond the embryo fruit, and all branches getting naked and "blind" are cut out completely, so that nothing is retained but the healthy young fruit-bearing vines. Fruits that are coming crooked are placed in long tubular glasses, which prevent a deformed development.

FRENCH BEANS.

Of these great quantities are grown. The earliest crop is sown in frames that have just been relieved from young Cauliflowers and Lettuces, and protected for a time. After they come up they are gradually hardened off, by removing the sashes during fine weather, and only replacing them to protect the young plants from cold winds, frosts, hail, or heavy showers. Any vacancies that occur are made up from a reserve stock. This crop has been in good bearing now for several weeks. Another early crop was sown in lines in front of a south wall; these made such quick progress as almost to overtake the frame plants. The first main crop is sown about the middle of April, in lines three feet apart. This is not sown in open spaces, but lines are drawn for it between other crops, such as Cabbages, Cauliflowers, &c., and the seeds are sown so that by the time they get up the other vegetables on the ground may be removed. But this is not all, for no sooner is the old crop removed than the intervening spaces are planted with Cos Lettuces. Before the French Beans begin to require all the space the Lettuces have been tied up and removed for market. This first main crop is not all of one kind, but consists of alternate lines, one a dwarf, pale pink-flowered sort, and the other a much stronger-growing, free-blooming, and branched kind. This plantation consists of several acres, and so thickly are the plants now producing pods that a strong force of women is scarcely able to pick them as fast as they grow. Other plantations are coming on in succession, but they consist chiefly of dwarf-growing kinds, and the lines are further apart than the former, being about three and a half or four feet. This extra space is not, however, lost; on the contrary the late crops being only lately removed, the alleys are now being planted as time permits with two lines of strong Colewort plants. Before sending the Beans to market they are all washed to remove grit, and they are packed into common round vegetable baskets, which are piled one above another on large two-horse waggons, several of which are sent to market three times a week.

MUSHROOMS.

Mr. Steel has plantations of these, annually covering nearly an acre. They form a continuous series of ridges and furrows. At present the old Mushroom beds are covered with Tomatoes that were planted at their base. New beds will be formed towards the end of August or first of September, and each bed will occupy a breadth of seven feet, *i. e.*, a four-foot bed and three feet as an alley. Mushroom ridges are made of short stable dung, built up firmly to a height of nearly four feet, and about the same in diameter at the base. Over their whole surface two or three inches of loam are placed; they are then spawned and covered with a layer of rank stable litter. In November these beds are in good bearing, and go on producing good crops every week until May, after which their best season is past; yet some of them continue to bear freely for some time after that. When gathering the Mushrooms, the rank litter is carefully removed with a fork by one man, and after him come others with baskets into which the Mushrooms are put, and as soon as the ridge is cleared of all that are ready the litter is immediately replaced, for it is important not to allow them to become too much exposed at any one time. Mats, if to be had, are sometimes placed on the top of the ridges to preserve them from cold drenching rains, frosts, and rough winds. The latter are very injurious to the crop. It takes an immense quantity of manure to make any extent of these

ridges, and by the time they are "spent," it is very much reduced in bulk and substance. Of all market-garden crops this is the most expensive and uncertain; some may grow them for years without a check, and all at once they may some season be a complete failure. A famous grower in the vicinity of London, who grew them for many years most successfully, a few seasons ago made up his ridges as before, treated them the same, and was in full expectation of a fine return. From some unaccountable cause, however, they became a total failure that year, by which he lost no less than about £500.

ONIONS.

These are only grown for home use and for early salading. For this purpose, slight hotbeds are raised in the end of January, and in the first of February some of the White Tripoli Onions are sown for drawing young. This favourite variety is the one most grown in market gardens round London, as it produces a longer white neck than any other kind, and is of excellent quality. Before sending it to market it is washed, rubbing the outside skin off in the operation, and tied into little bundles.

RADISHES.

These form one of the principal spring crops. In summer Radishes are in general not so good; but here, even as late as the end of June, they are excellent, a circumstance doubtless to be attributed to the moist state of the soil, caused by irrigation. Radishes, after the end of April, prefer a cool, moist, and partially shaded situation. The first crop of these is sown as early as the beginning of February, out of doors, in deeply-worked, well-manured ground, made into four, five, or six feet beds, with a foot alley between them. The surface is broken a little, and the seed is sown broadcast, and raked in, and the beds are then rolled by means of a roller drawn by two men, each walking in the alley on each side of the bed. After being sown, the beds are covered with litter until the plants come up, when the litter is removed in the morning, but replaced in the evening. Birds are great enemies to this crop, and for this reason a boy is kept at each plantation to frighten them away. The varieties of Radishes grown are the white and red turnip-rooted and the long red salmon. Successional sowings are made every fortnight, or, in fact, as often as ground can be had for them, manured and dug. Coverings of litter are employed from the time of sowing until the young Radishes germinate, for they are not only useful in protecting the seed-bed from cold at night, but also prevent birds from making a prey of them by day. Cauliflowers, Lettuces, &c., make a good succession to this crop, and Spinach and Turnips are also often made to play the same part.

(To be continued.)

THE FOREST OF DEAN.

TILL iron took the place of oak, the trees of our noblest forest were devoted to the sea. At least half our historic ships were born between the Severn and the Wye. It is a strange country still. The Forest of Dean represents a time when all the land in Gloucestershire belonged either to the Church or to the Crown. It formerly crossed the river until it met the southern spurs of the Cotswolds. Even now, though it has receded before farms and fields, it comprehends nearly the fourth part of a large and populous county, without containing any collection of cottages within its bounds that can presume to call itself a town. A century ago it must have been a country of savages. Its churches and its schools are importations made within living memory. The people, who have by no means lost all their peculiar characteristics, seem to have lived almost wild among the woods, even in quite recent times, making frequent raids upon the neighbouring farmers' flocks, and, like the men of Robin Hood, waging chronic war upon the King's red-deer. There are no such forest depths to be found in England—no such oaks to be found in the world. You may lose yourself in acres of foxglove and bracken that grow as high as young trees. It is very extraordinary that this remarkable and picturesque region, filling as it does so large a district of Western England, should, except by the Admiralty and the iron-masters, be so utterly ignored. The passage of the Severn seems to keep back the army of landscape painters as it did the legions of Caesar. That can be the only reason, for it is the only part of England left where English forest scenery is in its full perfection, and holds its ancient supremacy. I have said that west of the Severn there are no towns. The capital of the forest is the Speech House, the Forest Hall, where the verderers still hold their courts of attachment, and are supposed to perform the other functions of justice according to forest law, which treated men and women as of no account in comparison with "vert and venison." It is a solitary lodge, miles away from any cluster of habitations, and it is the centre of that English poetry which is written upon

the leaves, not of books, but of trees. It has no historical associations of which I ever heard—no outlawed earl has left his traditions to take away the feeling that we are in the Britain that the Druids knew. We do not so much look for fairies among the ferns, though no doubt they are there, as to meet with Arviragus and Guiderius. Imogen's road to Milford laid straight through these oaks, and it is my own opinion that it was here where was first performed the sylvan part of "Cymbeline."

The character of the Forest of Dean is as English as that of its spreading oaks themselves. No forest is equal in beauty to an oak forest; and no such oak forest is to be found elsewhere.—G

THE HOUSEHOLD.

THE CHANTARELLE.

(CANTHARELLUS CIBARIUS.)

The Chantarelle grows sometimes sporadically, sometimes in circles or segments of a circle, and may be found from June to October. At first it assumes the shape of a minute cone; next, in consequence of the rolling in of the margin, the pileus is almost spherical, but as this unfolds it becomes hemispherical, then flat, and at length irregular and depressed.

When young its stalk is tough, white, and solid; but as it grows this becomes hollow and presently changes to yellow; tapering below, it is effused into the substance of the pileus, which is of the same colour with it. The pileus is lobed, and irregular in shape; its margin at first deeply involute, afterwards when expanded, wavy. The veins or plaits are thick, sub-distant, much sinuated, running some way down the stalk.



Chantarelle (*Cantharellus cibarius*). Woods, autumn; rich golden yellow; diameter, 2 to 4 inches.

The flesh is white, fibrous, dense, "having the odour of apricots" (Purton) or of "plums" (Vitt.) The colour yellow, like that of the yolk of eggs, is deeper on the under surface; when raw it has the pungent taste of pepper; the spores, which are elliptical, are of a pallid ochre colour (Vitt.)

"This fungus," observes Vittadini, "being rather dry and tough by nature, requires a considerable quantity of fluid sauce to cook it properly." "The common people in Italy dry or pickle, or keep it in oil for winter use. Perhaps the best ways of dressing the Chantarelle are to stew or mince it by itself, or to combine it with meat or with other funguses. It requires to be gently stewed, and a long time to make it tender; but by soaking it in milk the night before, less cooking will be requisite" (Badham).

Fresh Strawberries at Christmas.—Can any of your correspondents inform me how strawberries are preserved so as to have them fresh at Christmas? My employer has had some at that time which, he told me, had been kept in an ice house; they were, he said, perfectly fresh.—W. T.

Tomato Catsup.—Boil one bushel of good tomatoes until soft, then squeeze through a fine wire sieve; add half a gallon of vinegar, one and half pint of salt, two ounces of cloves, a quarter of a pound of allspice, one and half ounce of cayenne pepper, three tablespoonfuls of black pepper, and five heads of garlic, skinned and separated; mix and boil three hours, or until reduced one-half, and bottle without straining. We have used excellent catsup made from this recipe. The garlic may be omitted by those who do not desire its flavour, without injury.

GARDENING ROUND LONDON.

(DURING THE PRESENT WEEK.)

BY OUR SPECIAL REPORTER.

PRIVATE GARDENS.

Conservatories.—On Fuchsias and Japan Lilies lie our principal dependence in the way of flowering plants for conservatories and show-houses at this season of the year. Gladioli in pots are also very ornamental indoors, as are also the different kinds of Bell-flowers, especially *Campanula pyramidalis*, which is at present everywhere beautifully in bloom. *Humea elegans* is likewise a useful plant in conservatories. Annuals such as *Schizanthus*, *Zinnias*, *Celosias*, *Balsams*, *Gomphrena globosa*, and several kinds of *Amarantus*, also contribute considerably to the decoration of these houses. Where *Amarantuses* are wanted for succession they are kept in frames, and are repotted as they require that attention, taking care, however, not to over-pot them. *Trachelium caeruleum* is one of the most useful of plants for flowering. In order to keep up a succession of *Balsams* a reserve stock of them is kept in cool pits or frames; from these the blooms are then picked off as they appear, until within a week or two of their being wanted for use. Hard-wooded plants removed outside to mature their wood and to make room for gayer subjects, are being housed in some cases to save them from the drenching rains which we are now experiencing, and where they cannot be got indoors the pots are raised a little off the ground, so as to allow the water to run freely through, thus preventing, to a certain extent, saturation of the soil. Show and fancy *Pelargoniums* are now cut over, some of them pretty well into the old wood, and such as are the most shapely, to a joint beyond that to which they were cut back last year. They are then placed on a shelf, and are kept dry, or laid on their sides out of doors.

Stoves.—Encouragement of growth is not now so much the object aimed at as maturation of the wood produced. For this purpose no more shading is used than is absolutely necessary; canvas shadings, therefore, which are movable are much more convenient than either frosted or white-washed glass. Among the gayest plants at present in Stoves are *Allamandas*, which in all cases blossom best when their roots are allowed to ramble in some bed or border of good soil, and when their shoots are trained along the roof. Thus circumstanced they give more satisfaction than when tied around pot trellises. Of *Achimenes*, *Gloxinias*, and other *Gesneraceous* plants several are still in bloom, and such as are done flowering are laid on their sides to prevent their roots becoming injured by drip; such *Gesneras* as *exoniensis*, *zebrina*, and others of that section, receive encouragement for bringing them in in succession; they are admirable for indoor decoration. In repotting these, the soil is not shaken from the roots, the crocks only are removed. As some of the earlier started *Caladiums* show symptoms of decay, they are removed to some out-of-the-way place and gradually dried off. Some venture to keep them in a green or growing state throughout the winter, but that is not good practice, though occasionally the plan may succeed. Plants of *Clerodendron Kämpferi* that have done blooming are set aside and gradually dried off, whilst those coming into bloom are supplied occasionally with manure water. This *Clerodendron* strikes freely from cuttings of mature wood in spring in a brisk heat. Those put in last spring are now strong, and are being repotted in six-inch pots, and kept in a stove temperature. Rotten manure, yellow turfy loam, a little peat, and a good admixture of sharp sand suit them admirably.

Pits and Frames.—These are becoming filled with cuttings of *Heliotropes*, *Verbenas*, and some of the finer kinds of *Geraniums*. For *Ageratum*s, *Gazanias*, and *Calceolarias* there is yet time enough; indeed, they are seldom put in until the others are rooted, lifted, and potted, or put thickly into boxes. *Chrysanthemums* are, for the most part, placed in sheltered positions on a bed of ashes, out of doors; still, however, a few are kept in frames, especially young plants, to which plenty of air is given. Many of the most forward *Cinerarias* now need a shift from small pots into four or six inch pots, using a good deal of well-seasoned rotten manure in the compost. Seedlings are repotted as they require it. A sowing of herbaceous *Calceolarias* is being made; some prefer to sow late and to encourage the seedlings for a while with heat, whilst others sow earlier and treat them more hardily. *Auriculas* are being repotted and placed in frames that look to the north. *Cyclamens* are also repotted and placed near the glass in frames or pits, and syringed every day. A gradual increase of moisture is given at the root. *Pansies* are propagated by means of cuttings inserted in sandy soil in frames, and well shaded for a time. Ten-week *Stocks* are sown in pans of light soil in cold frames, for winter blooming. A few *Violets* for forcing are being potted, and placed in airy frames.

Flower Garden and Shrubbery.—The season for propagating *Geraniums* and plants of that kind has again arrived; the cuttings

are taken from the outer edges of the beds, or where they can be had stout and stably in constitution, and they are inserted in warm borders, without shade or other covering. Bedding *Pansies* are being increased by means of side-shoots taken off with some roots attached to them, or by lifting the entire ball of roots and separating it into divisions, each of which forms a new plant. In the case of *Gladioli* that have done blooming, the flower spikes are cut over just below the place where the first flowers opened. The points of *Hollyhocks*, and likewise their laterals, that are growing too tall, are pinched out, and, where time can be spared, the plants should receive a good watering with manure water, as should also *Dahlias*. Seeds of *Tropaeolum canariense* are now being gathered; also seeds of ordinary *Nasturtiums*, in a green state, for pickling. *Roses* are still being budded, though some have already finished that operation. In budding, a single longitudinal cut is preferred by some to that in the form of a T; but it has this disadvantage, that it takes longer time to do than the T system does.

Indoor Fruit Department.—Shifting such *Pine-apples* as require that attention is being carried on with as much expedition as possible. The plants shifted are plunged in a bottom-heat of about 85°, and no water is given them until they begin to form fresh roots. Plants that are setting, or have just set their fruit, have some good fibrous loam placed around the necks of the stems, so as to encourage the emission of new roots. *Muscat Grapes* require a brisk temperature to ripen them well, and afterwards proper means are taken to thoroughly ripen the wood. Second crops of *Figs* promise to be good; abundance of water is given them, and syringing is still continued. To *Melons*, a high temperature is maintained and a little air is kept on night and day; those ripening require the border and atmosphere to be kept rather dry. *Cucumbers* are still in good bearing. Some are now lime-washing their pits, making up new borders, and thoroughly overhauling matters, previous to the approach of cold weather. Seeds for winter-bearing plants are now being sown, but another sowing will still be made to come in a little later. Fresh *Mushroom* beds are being made in cellars, dark sheds, and similar places. Those made up last month are scarcely old enough yet for spawning.

Hardy Fruit and Kitchen Garden.—Budding of *Pears* and *Apples* on the T system is still proceeded with; budding of stone fruit has been finished. Where earwigs are troublesome to wall trees, traps are laid for them amongst the branches; they consist of dried hollow stalks, which are frequently examined, and all insects found in them are destroyed. *Strawberries* layered in pots are now being separated from the parent plants and repotted, *i.e.*, if their present pots are filled with roots. Those for making the main outdoor plantations only await ground becoming empty for their accommodation, so well established have they already got. The weakest of young shoots springing from the *Raspberry* stools are removed, preserving only the strongest, which, if getting very tall, have their points pinched off. In the kitchen garden the surface of the soil is loosened with the hoe as often as time will permit. It is a too common practice to rake the ground amongst crops after hoeing, with the view of giving it a neat appearance. This should only be done in cases where rank weeds want removal; but these, on the other hand, should never have been allowed a footing. In market gardens, rakes are only used for breaking the surface of the soil, in order to prepare it for the reception of seed. The first planted *Celery* crop is being earthed up a little; the main late crop has just been planted. *Endive*, sufficiently advanced, is tied up to blanch, or is covered over for the same purpose. Some are being planted in warm, sunny positions; a sowing for a late crop has just been made. A small sowing of *White Stone Turnips* is being made for spring use. *Broccoli* is being planted out, as are also *Cabbages* for *Coleworts*, advantage being taken of the moist weather which we are now experiencing for the operation. Some *Cabbages*, such as the *Red*, *Early York*, *Fulham*, &c., were sown the last week of last month, and the main sowing made the first or second week of this one. *Lettuces* are being tied to "heart"; a sowing of *Angelica* is now being made. Ground is being prepared for the main sowing of prickly *Spinach*; two sowings of which—one about the first and one in the latter end of the month—will keep up a good supply throughout the winter. *Corn Salad* for the winter supply is also sown. The *Onion* ground for the winter supply is being prepared. *Late Peas*, in addition to the moisture they get from rain, are sometimes given a good soaking of manure water. All kinds of *Onions*, as they show signs of ripening, are lifted and laid out to dry, or are tied up in bundles and stored in dry sheds. *Pot* and *Sweet Herbs* are also cut over, tied into little bundles, and hung up to dry.

NURSERIES.

Indoor Plant Department.—All plants which require a shift get it immediately, so as to have their pots well filled with roots before the winter sets in. Young *Azaleas* and *Bouvardias* are being tied

into the shape which it is intended they shall assume. In the case of Azaleas, however, properly managed young nursery plants seldom require any tying, the pinchings which they receive throughout the summer being generally sufficient to convert them into shapely plants. Young Camellias, for grafting on next year, are now set out of doors, so as to mature the wood which they have made in warm moist houses; others are still being grafted. *Pereskia* plants for grafting *Epiphyllums* on are kept near the light in a cool house; about the middle of this month, a good many of them will be grafted. Young plants of *Cytisus racemosus* that made their growth under glass, and which had received three successive pinchings during that period, are now set outside, so as to mature their wood; they are now, as may be imagined, fine stubby plants. Heaths of various descriptions have just been potted and replaced in cold frames. Mats are thrown over them for a time until they take to the new soil; strong plants of them that had been previously potted this year are arranged into order outside, and when they can be placed in frames, they are protected from heavy showers by placing the lights over them. Air is, however, given them by means of tilting the lights.

Outdoor Department.—The last fortnight has been a busy time amongst young fruit trees, some being engaged in training, others in budding them; many are affected with aphides, which this year seem unusually troublesome; a cure for them is, however, found in a preparation of hot water, soft soap, Gishurst Compound, and tobacco water, with sometimes the addition of a little soot and sulphur. After this gets cold, men take some in a small vessel, and, with a second-size painter's brush, go over the trees, sprinkling all the shoots with the mixture. Pears and Apples are now being budded; budding of stone fruits and Roses is finished. Into nurseries, rose-budding without the T incision has found its way; but the time it takes to put in the buds without the cross cut is an objection to its use. Fruit trees are still budded in the old way. Shading is removed from Pansy beds, and young Conifers raised in frames are fully exposed. Plants of *Araucaria imbricata* raised from seed sown early last spring, are being taken out of the seed pans and replanted in pans of light peaty compost, placing the plants round the edges of the pans.

SOCIETIES, EXHIBITIONS, &c.

ROYAL HORTICULTURAL SOCIETY.

(AUGUST 7TH.)

At this meeting there was a nice collection of different kinds of variegated-leaved *Pelargoniums* and a magnificent display of herbaceous *Phloxes* in pots, from Messrs. Downie, Laird, & Laing. Tricolor *Pelargoniums*, both old and new, were shown in admirable condition by Mr. Turner, of Slough. From Messrs. E. G. Henderson also came another collection of these favourite plants, among which was a good ivy-leaved kind, the foliage of which is conspicuously variegated with white. The prize offered for the best zonal golden tricolor *Pelargonium* was won by Mr. T. Pestrige, Uxbridge, with Sir Robert Napier, a dark zoned kind, very distinct and fine. For the best silver tricolor Messrs. Downie, Laird, & Laing were first with Mrs. Laing, a beautiful red zoned kind, bright and striking. To the same nurserymen was also awarded the first prize for the best golden bronze zonal, the kind being W. E. Gumbleton, a fine dark-brown broad zoned new variety. Of golden selfs few were exhibited; Mr. T. Pestrige took the highest prize with Golden Banner, a compact-growing sort with rosy pink flowers. Among silver-edged kinds, that which won the first prize was May Queen, a close-growing variety, the leaves of which are very deeply variegated. This came from Mr. Turner, to whom was also awarded the first prize for the best nosegay *Pelargonium* in bloom, the kind being Mrs. Quilter, a beautiful sort, with bold rosy pink trusses of flowers well thrown up above the leaves. Prizes were offered for double-flowered zonal kinds, and the first was awarded to a large plant of Victor Lemoine, a beautiful bright scarlet, from Mr. T. Pestrige. A nice group of hardy Ferns in pots was contributed by A. Thompson, Esq.; it contained many fine varieties of *Scopolendrium* and Lady Fern; also a curious form of *Asplenium Trichomanes*, called Moulei, and a finely crested plant of *A. Adiantum-nigrum*. Along with a collection of ornamental-foliaged plants from Mr. Bull was a fine group of Arums, remarkable looking plants, seldom seen in any quantity at exhibitions, though rich in variety and interest. Of *Bertolonia marmorata*, a charming example was exhibited by Mr. Green, gardener to W. Wilson Saunders, Esq., and was deservedly awarded a cultural commendation. Of Orchids only a few were shown, but among them was a very fine plant of *Grammatophyllum Ellisii*, bearing a flower spike on which were forty blossoms. We also noticed a beautiful-flowered plant of *Massevallia Harryana*, and one of *Mesospidium vulcanum*. These, as well as the *Grammatophyllum*, came from Messrs. Veitch. *Peristeria elata*, with two tall flower spikes, came from Mr. Bull; and a fine example of *Cattleya crispa* was shown by Mr. Baxal, Woodford Bridge. Two fine collections of Balsams were furnished, one by Messrs. Lee, of Hammer-smith; the other by Messrs. Smith, of Dulwich. Of *Verbenas* some fine trusses of bloom were shown; and some beautiful spikes of *Gladioli* were shown by Messrs. Standish & Co., who also furnished a basket of

Bouvardia Vreelandii. Both single blooms and spikes of *Hollyhocks* were excellent, the flowers being of good colour, large and very double.

Of fruit there was but little. Some good grapes were shown, especially two fine bunches of Muscat of Alexandria, from Messrs. Lane & Son, of Great Berkhamstead, and two of Duke of Buccleuch, from Mr. Wm. Thomson, of Galashiels. The latter were remarkable for size of both bunch and berry. A few nice Peaches, Nectarines, and Plums were shown, also a good many sorts of Gooseberries. A good kind of long-podded French Bean was exhibited by Messrs. Lee, called Imperial Long-pod. The pods are from six to eight inches long and very fleshy. Some very remarkable Onions were shown by Mr. Piccorillo, of Wigmore Street. Some idea of their size may be obtained from the fact that the aggregate weight of six of the early White Naples weighed twenty-one pounds, and three Red Naples seven pounds five ounces. The same exhibitor also showed some fine specimens of Garlic.

First-class certificates were awarded to the following:—
Hollyhock Eleanor, a fine double pink seedling, from the Right Rev. Lord Hawke, of Gainsboro'.

Verbena, Mrs. Lewington, a large-flowered rosy-crimson kind.
Fern *Lastrea Filix-mas*, var. *Festingii*, a stiff-growing crisped form of male fern.

OBITUARY.

We have to record, with much regret, the death of Mr. James Ivery, of Dorking, which took place on the 2nd instant, at the comparatively early age of forty-eight. For years he had been an exhibitor at our metropolitan shows of hardy ferns, of which he had a grand collection. He was also a most successful raiser of Indian azaleas, and to him are we indebted for many of the very best varieties of that plant which our gardens at the present day contain.

COVENT GARDEN MARKET, August 9th.

Flowers.—*Fuchsias*, *Balsams*, zonal *Pelargoniums*, both single and double, *Cockscombs*, and *Lilies* are now plentiful. In addition to *Japan Lilies* and blue African *Lilies*, there are several nice little plants of the *Indian Lily* (*Vallota purpurea*) with fine flower heads, each consisting of from two to seven blooms. *Gladioli*, in six-inch pots, form a conspicuous feature, and besides those in pots there are immense quantities of cut blooms of *Brenchleyensis* and other showy kinds. Musk, in small pots, is furnished in abundance. *Creeping Jenny* (*Lysimachia nummularia*) is, owing to its tenacity of life under adverse circumstances, a great favourite with window gardeners, and of this there is generally a good supply. *Lobelias*, especially *L. speciosa*, are also favourite pot-plants, as are likewise *Heliotropes*, dwarf *Asters*, *Lantanas*, *Zinnias*, &c.

Fruits and Vegetables.—Of fruits, those from the open air are not only scarce, but they are not of first-rate quality. Pine-apples, both Queens and others, are supplied in good condition. Melons are not remarkable, as a rule, for quality; but Cucumbers, especially those from pits, are very good. Grapes are excellent, Hamburgs being the favourite black sorts. Amongst white kinds we noticed a basket of Duke of Buccleuch, the individual berries of which are very large. Plums, Peaches, Apricots, &c., are for the most part imported, but there is also some good English indoor-grown fruit of all these sorts. Tomatoes are now plentiful, but none come yet from the open air. Onions, Turnips, Cabbage, Vegetable Marrows, and Potatoes are also abundant. French Beans, of which there is a fine crop this season, are now taking the place of Peas, which are getting scarcer than they have been. Gherkins are plentifully supplied, and young Celery has also made its appearance. Small salading continues to be furnished, and includes Lettuces, Onions, Radishes, Mustard, Cress, Lamb's Lettuce, Beet, and Endive.

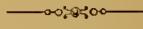
PRICES OF FRUIT.

	s. d.	s. d.		s. d.	s. d.
Apples half sieve	2	0	to 3	0	15
Apricots per doz.	2	0	4	0	15
Cherries per lb.	1	0	3	0	15
Chestnuts bushel	0	0	0	0	0
Figs per doz.	4	0	10	0	0
Filberts lb.	0	0	0	0	0
Cobs lb.	0	0	0	0	0
Grapes, hothouse lb.	3	0	6	0	0
Lemons 100	7	0	10	0	0
Melons each	3	0	6	0	0
Nectarines per doz.	4	0	15	0	0
Oranges 100	8	0	15	0	0
Peaches per doz.	12	0	13	0	0
Pears per doz.	2	0	4	0	0
Pine Apples lb.	3	0	8	0	0
Plums per box	3	0	4	0	0
Strawberries lb.	0	6	2	0	0
Walnuts bushel	10	0	25	0	0
ditto per 100	1	0	2	0	0

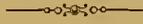
PRICES OF VEGETABLES.

Artichokes per doz.	4	0	to 0	0	0
Asparagus per 100	0	0	0	0	0
Beans, Broad per bush.	3	0	4	0	0
Beans, Kidney ½ sieve	1	6	2	0	0
Beet, Red doz.	1	0	3	0	0
Broccoli bundle	0	9	1	6	0
Cabbage doz.	1	0	2	0	0
Carrots bunch	0	6	0	9	0
Cauliflower doz.	2	0	6	0	0
Celery bundle	1	6	2	0	0
Chilies per 100	1	6	2	0	0
Coleworts doz. bunches	2	6	4	0	0
Cucumbers each	0	6	1	0	0
Endive doz.	2	0	0	0	0
Fennel bunch	0	3	0	0	0
Garlic lb.	0	8	0	0	0
Gherkins per 100	1	6	2	6	0
Herbs bunch	0	3	0	0	0
Horseradish bundle	4	0	6	0	0
Lettuces bunch	0	2	0	4	0
Leeks score	0	6	1	6	0
Mushrooms pottle	2	0	3	0	0
Mustard & Cress, punnet	0	2	to 0	0	0
Nasturtium seed for pickling per pint	0	0	0	4	0
Onions per bunch	0	0	0	6	0
Onions bushel	3	0	6	0	0
pickling quart	0	0	0	9	0
Parsley, doz. bunches	3	0	4	0	0
Parsnips doz.	0	9	1	0	0
Peas per quart	0	0	1	6	0
Potatoes, Kidney... cwt.	4	0	7	0	0
Potatoes, Round... do.	3	0	7	0	0
Radishes doz. bunches	0	6	1	0	0
podts for pickling, pint	0	4	0	0	0
Salsafy do.	1	0	1	6	0
Scorzenera bundle	0	9	1	3	0
Shallots lb.	0	4	0	6	0
Spinach bushel	2	6	4	0	0
Tomatoes doz.	2	0	4	0	0
Turnips bunch	0	4	0	8	0
Vegetable Marrows doz.	2	0	3	0	0

THE GARDEN.



"This is an art
Which does mend nature : change it rather : but
THE ART ITSELF IS NATURE."—*Shakespeare.*



"SCIENTIFIC MEN."

We are glad to notice that the Premier protested, in his speech on the Hooker and Ayrton affair, against the practice, common among students of natural history and other branches of knowledge, of describing themselves exclusively as "scientific" men. "Scientific men as they are called by the exclusive appropriation of a title which I must protest against," said Mr. Gladstone. If the term has any meaning at all it must mean men of knowledge, as the word science simply means knowledge. Therefore it is absurd for one or more classes of students or workers to lay claim exclusively to the term "scientific." Of all terms now in use in our tongue there is none that has led to so much confusion among the dim-seeing and the ignorant as this. And it is much to be regretted that the very men who labour most in the interests of knowledge should be responsible for using it so much. In our own art one may take up some family of plants or trees, grow them, and be perfectly conversant with them in every way as well as with their nomenclature, and yet lay no claim to be considered a scientific man. On the other hand, some student who betrays a taste for botany, dries plants, writes, perhaps, a few manuals concerning the naming or classification of the plants which the cultivator grows, and eventually settles into a botanical chair, is, of course, a "scientific man." For our convenience it is desirable that plants, like everything else, should have some name by which we may speak of them; it is most desirable that they should be classified in a natural and convenient manner, and we desire to render due honour to all who devote their lives to such necessary work; but we protest, as Mr. Gladstone did, against any one class of students appropriating the title to themselves. All are but labouring at "parts of one stupendous whole"; there are only differences of degree between all seekers after truth. This is, of course, evident enough to all clear-seeing workers in every branch that lays claim to the distinction of knowledge, and we hope they will endeavour to spread a more modest and a juster view of the matter among their feebler and more narrow-minded brethren.

NOTES OF THE WEEK.

— *Datura Wrightii* is now producing its handsome long tubular double flowers somewhat freely in the sub-tropical garden at Battersea Park.

— *Jubæa spectabilis*, supposed to be the hardiest of the palms, is now thriving fairly in the open air at Glasnevin, but it has not as yet had a sufficiently long trial. It is probable that our sun is too feeble to enable it to make a vigorous growth.

— Among hardy trees perhaps the finest in flower at present is *Catalpa bignonioides*, three fine specimens of which may be seen on a lawn at Cromwell House, Mortlake, the residence of Mr. James Wigan.

— A FINE plant of *Hydrangea quercifolia*, a splendid free-flowering shrub, is now blooming at Messrs. Veitch's nursery at Coombe Wood. The specimen is about four feet high, and is producing its large panicles of pink-tinged white flowers in abundance. This fine shrub should have a place in all collections of hardy plants.

— At a meeting of hot-water apparatus manufacturers, held on Wednesday last in Kettlewell's rooms, King Street, Covent Garden, a joint protest was drawn up against the decision of the judges at Birmingham, by which they assigned the gold medal to Messrs. Hartley & Sugden, of Halifax, without, it was considered, sufficient and satisfactory grounds for such award, and, as it appeared to the meeting, against the evidence of true excellence and in violation of the regulations laid down by themselves for the conduct of the trials; which award, therefore, was believed to be unlawfully assigned, and ought to be withheld, or, if given, to be withdrawn. A dozen reasons

were advanced in favour of a reconsideration of the whole matter, which will doubtless be brought under the notice of the judges by whom the award was made. The Royal Horticultural Society wish it to be clearly understood that they had nothing to do with the awards made at Birmingham to boilers, nor the appointment of the judges, neither was any medal of the Society given to the competitors.

— THE showy American aquatic plant, *Limncharis Humboldtii*, is now flowering profusely in a tank in the open air at Glasnevin. It is accompanied by the interesting *Trapa natans* (the Water-chestnut), which is so rarely seen in our botanic gardens.

— A PLANT of the *Cocoa* (*Theobroma*) is now bearing its large dark orange coloured fruit in one of the stoves at Glasnevin. It has been fruited in a large pot. The Mango is also fruiting freely in the same garden, which is in all respects in fine condition just now.

— WE noticed the other day at Messrs. Rollisson's nursery, Tooting, imported plants of *Venus's Fly-trap* (*Dionæa muscipula*); likewise a fine importation of the yellow Pitcher plant (*Sarracenia flava*), also growing strongly.

— ONE of the finest hardy grasses at present in flower is *Sorghum halepense*, a noble plant of which may be seen at the Exotic Nursery, Tooting. It stands some four feet in height, and is producing a profusion of graceful panicles of reddish-brown or purplish flowers. Tufts of it would look well isolated on turf.

— A LARGE batch of the beautiful *Lilium speciosum* (*laucifolium*) and its varieties has just commenced to bloom in Mr. Barr's trial grounds at Tooting. This fine lily is quite hardy and thrives perfectly here, as well as in several other places out of doors round London.

— A FINE hybrid *Gaillardia*, named *Telemache*, is flowering at Messrs. Henderson's, Wellington Road. It has a free-branching habit and flowers abundantly. The disk and lower part of the florets are of a dark-reddish colour, while the tips of the latter are bright orange-yellow.

— THE potato disease, we are sorry to hear, has appeared in many places with unusual virulence, and advantage is being taken of the dry weather we are now experiencing to take up early sorts as fast as possible. Not only from different districts in England, but also from Scotland and Ireland, does such news reach us.

— NEW JERSEY never was more luxuriant than at present as regards fruit. The cherry crop has been very heavy, unusually so, and peach trees are bowing to the ground with the weight of their fruit. The peach crops in South Illinois are also said to be prodigious.

— MANY of the proprietors of the southern vineyards of France, where the vines have been attacked by *phylloxera*, have it in serious contemplation to substitute the cultivation of the ramie or China grass for that of the vine. There are, on the other hand, it is said, indications of an early and good grape season in the vine districts of Switzerland.

— THE little beds adjacent to the so-called "rockwork" at the end of the Serpentine in Hyde Park, which in former years formed a chief object of attraction in that part of the park, remained empty until the morning of Friday the 9th instant, when they were filled with plants that, if wanted to make satisfactory growth out of doors, should have been planted at the very least two months ago. We shall be curious to see how these late-put-in plants comport themselves.

— It will doubtless interest our readers to know that Mr. Thomas Jones, gardener to the Right Hon. Lord Leconfield, at Petworth Park, Sussex, has been appointed to succeed the late Mr. Rose as gardener to her Majesty at Frogmore. Mr. Jones has been nearly fifteen years at Petworth, where the gardens bear ample evidence of his skill as a cultivator. In his earlier days he was at Crewe Hall, Trentham, and other good places. Such lengthened practice, therefore, cannot fail to eminently qualify him for the important position he has been selected to fill.

— STEPNEY GREEN, which has just been laid out as an ornamental garden, was opened to the public last Saturday. It is enclosed by a handsome iron railing, seven feet six inches in height, which springs from a red brick base about two feet high, with a stone coping. Several old cross thoroughfares, the greater number being rights of way, intersect the ground; and whilst these have been preserved by distinctive railing and boundary marks, they have not interfered with the appearance of the garden. At the upper end of the ground is a large number of full-grown trees, which have been preserved in their entirety, thus giving to the newly-formed garden a maturity of appearance which seldom belongs to works of this character. A lodge and gardener's residence are amongst the buildings to be erected within the grounds.

— A HOUSE recently built in the College Gardens at Dublin has been glazed with violet glass, so we shall probably hear more of the behaviour of plants beneath it. General Pleasanton's report of its virtues requires confirmation.

— *SEDUM CYANEUM*, a pretty and by no means common species of Stonecrop, is now in bloom in a border at the Hale Farm Nursery, Tottenham, where also may be seen patches of the fine *Sedum Eversii*, which is producing its corymbs of purplish flowers more freely than we have hitherto seen it do.

— SCARCELY less beautiful than the wallflower in early spring is the red Valerian on some old ruins and walls at present. On some of the old ruins in Wales it may be seen established here and there, and will probably some day be as commonly seen on such places as the wallflower. It is seen in greatest perfection naturalised on stony banks or old walls, &c.

— AT Milan, during a hurricane which has recently visited that city, the strongest trees were torn up by the roots, and among those destroyed was the majestic elm planted three centuries ago by the Archduke Ferdinand. About fifty planes were levelled to the ground on the Lazaretto.

— *ARUNDO CONSPICUA* is just now, and has been for some weeks, one of the most beautiful objects in our gardens, especially in the milder seashore and southern districts. It grows from seven to nine feet high, and blooms beautifully long before the Pampas-grass begins to send up a shoot. We recommend the plant for every garden or pleasure-ground in the milder parts of the country for which hardy ornamental plants are sought.

— A FINE tuft of the American Pitcher-plant (*Sarracenia purpurea*) is now in perfect health in the bog garden at Glasnevin. It has been in the same position for the past ten years; therefore there need be no doubt whatever that it is as hardy as any native bog plant. It should be planted in wet (not merely moist) peat, and in a sunny open position. The *Darlingtonia* is making fair growth in the same bog, but has only been out a few months.

— THE dwarf *Acæna microphylla* is this year producing its crimson globular heads of spines more freely than we have ever before seen it in the neighbourhood of London; in fact, a plant of it that we noticed at Kew was completely covered with them, and in this condition it presents a very striking appearance. It is a capital subject for the margin of a border, and it will likewise be found a useful plant for rockwork. The plant, flower-heads and all, is little more than two inches high.

— Two pretty and distinct kinds of Snapdragon are now in flower in the neighbourhood of London, viz., *Antirrhinum siculum* and *A. rupestre*. The first is at Mr. Parker's, Tooting; in habit and colour of flowers it somewhat resembles the common Snapdragon, but it has very narrow leaves. The latter is in flower at Mr. Ware's, Tottenham; it has a dwarf and somewhat prostrate habit, and produces whitish flowers with yellow streaks, the lip being of a flesh or pinkish colour.

— IN the College Botanic Garden at Dublin a dozen or more specimens of the Californian Soap Plant (*Chlorogalum*) are now in flower. The plant is quite hardy there, and seems to thrive better than we remember to have seen it on the foothills of the Sierras, where it abounds. The flower stems reach a height of ten feet, and at first sight look like gigantic specimens of *Anthericum ramosum*. It is not ornamental; useful it may prove if soap shares the fate of some of our other indispensable commodities and goes up in price.

— SOME of the most remarkable grapes we have ever seen were shown at the Royal Horticultural Society of Ireland's show at Salt Hill on the 8th instant, by Mr. Roberts, gardener to Colonel Bury, Charleville Forest, Tullamore. One bunch of Muscat of Alexandria looked like a large bunch of the Syrian, and weighed, so we were informed, seven pounds. Other grapes were shown by the same exhibitor in equally fine condition, and proved clearly that Mr. Roberts is in the very first rank of grape-growers.

— THERE is some interesting matter to reward the patient reader of the Blue-book containing the Hooker and Ayrton correspondence. We have all heard of the man who was so thin that "you could see through him," but accustomed as we are to surprises nowadays, all of us must be alarmed to find it stated in an important official communication that the vegetation of the Palm-house at Kew presents so ghostly an aspect that the Museum beyond the lake can be seen through it. This statement will be found at page 99, where, in a letter to the First Commissioner, Dr. Hooker says that the leaves on the plants in the Palm-house are so spare "that the pots and tubs are everywhere seen; and a person standing outside the north wing can see the Museum building through it all along;" that is to say, through sixteen parallel rows of plants.

— THE most beautiful flowering tree we have for a long time seen is a healthy specimen of *Gonista ætensis*, now in bloom at Glasnevin. It may be likened to a slender-twigged *Cytisus* with a habit like that of the weeping willow. We feel sure that any of our Irish readers who may be led by this notice to visit the tree will be very likely to seek it from their nurserymen this autumn.

— LOVERS of interesting hardy herbaceous plants would be pleased to see the healthy tufts of *Calceolaria violacea* now coming into flower in the Royal Botanic Gardens at Glasnevin, near Dublin, where this *Calceolaria* is perfectly hardy. It is usually planted on warm borders of light rich soil, and allowed to grow against the walls of the houses.

— THE singularly beautiful *Philesia buxifolia* has bloomed freely in the Royal Botanic Gardens at Dublin this year, and the last flowers are now upon it. To those who do not know it, it may be described as a low box bush with a tendency to climb, but bearing flowers very like those of *Lapageria rosea*. It is perfectly hardy, and at Dublin grows in a moist peat border at the foot of the north wall of one of the ranges of glass, and in a corner where it gets little if any sun. The specimen at Glasnevin was one of the most beautiful objects we have ever seen in a garden.

— ONE of the principal salesmen in the Grand Row, Covent Garden Market, informs us that it is impossible to offer any opinion as to the quality of home-grown fruit this year, for it has been so scarce that throughout the whole season he has only seen about four dozen Apricots, and other outdoor fruits are proportionately scarce. He gets his principal supply from the Channel Islands, and, taking into consideration packing and carriage, prices must necessarily be high. Jargonelle, and other early Pears, are said to be very poor indeed.

— NEXT to the Tritomas the most conspicuous herbaceous plant in flower during the present week is the large *Lobelia Tapa*. It is rarely seen in London gardens, and probably perishes on cold soils, but in rich and well-drained ones in mild districts its tufts are now four or five feet in diameter and as much high, and it forms huge leafy tufts like a great *Salvia*. It is peculiarly suited for association with the nobler autumn flowering herbaceous plants, where it thrives well. A good example of it may be seen at Tottenham, where, we are informed, it has stood out of doors for the past three seasons.

— THE windy weather on Saturday and Sunday last played sad havoc with some of the sub-tropical plants in Hyde Park, particularly plants of the *Musa Cavendishii*, the leaves of which were literally torn into "ribbons." The *M. Ensete* did not fare so badly; nevertheless some plants of it were considerably damaged. Among other plants injured were the *Strelitzia* and *Caladium esculentum*, many of the leaves of the latter being either broken off or bent so much that they could not recover. In the more sheltered sub-tropical garden at Battersea, such plants did not suffer so much (although one or two plants of *Musa Ensete* were much torn), but this is owing to the precaution being taken of tying the leaves up. On Sunday morning a very fine plant of *Arancaria Cunninghamii*, planted out in the Temperate House at Kew, had its top blown off, more than one-third of the length of the stem being carried off, and the plant consequently completely spoiled. We should add that the roof-sashes are open in summer.

A Botanical Bore.—"The personal insignificance which makes me hesitate as to the propriety of my asking you to insert a letter from me adds to the value of the testimony I am able to give to the invariable courtesy of Dr. Hooker in ordinary correspondence. More than four years ago, being in necessitous circumstances, I applied to Dr. Hooker for a situation in the library or herbarium, and was very well recommended. I was much disappointed at his reply that there was no vacancy nor likelihood of a vacancy in such a situation as I should be qualified to fill. Afterwards, on visiting the gardens in the summer of 1869, I noticed several inaccuracies in the labels attached to plants there, and I wrote to the Director on the subject, condemning the erroneous labels in the severest terms I could think of. I have now before me the reply which I have received on that occasion, admitting the general accuracy of what I said, and telling me that all labels should be taken to the library for correction before being placed out. Since that time I have always received a courteous reply when I have written to Dr. Hooker, which has not been often. The last occasion was not a month since, when I called attention to an error in the nomenclature of a plant in the herbaceous ground, to which I received a reply by return of post, thanking me for pointing out the error, which should be attended to at once. It is simply incredible that a gentleman so uniformly courteous to one who is a poor man and lightly esteemed, should treat an official superior with less consideration unless provoked by something too irritating for human virtue to sustain."—*J. Gibbs, Chelmsford Museum, in "Times."*

THE KEW AFFAIR IN THE COMMONS.

ON the motion that the Appropriation Bill be read a third time, Mr. Fawcett said that as this Bill appropriated the money voted by the Committee of Supply for the maintenance of Kew Gardens and the payment of the staff, he was strictly in order in referring to the position in which Dr. Hooker was placed. If Dr. Hooker should state that he had not intended to say anything of a personal character in his letter, and if the Government stated no discourtesy had been intended towards Dr. Hooker, the matter, he believed, would be amicably settled. He desired to avoid entering into the matter fully for fear of saying anything which would render a settlement more difficult. (Hear, hear.) Considering Dr. Hooker's public services and the benefit Kew Gardens had been to the country and to India, he believed he was expressing the unanimous wish of the House that nothing should be done likely to deprive the country of the eminent services of Dr. Hooker.

Mr. Osborne.—When the House considers that for Royal Palaces and gardens a sum of £100,000 is expended by votes of this House, I think it not unnatural that we should inquire very strictly into the management of those gardens. Lord Bacon has laid down that a garden is the purest of human pleasures. I come then to ask, How is it that Kew Gardens, in which the public so much delight, have become so fruitful a source of strife and bitterness? The answer is at hand. There is nobody more willing than I to testify to or acknowledge the valuable and efficient services of my right hon. friend the First Commissioner of Works. I believe him to be a valuable public servant; but the style of his rule reminds one of that of the centurion in the Scriptures who said to his servant, "Go, and he goeth"; and I think that it is very unfortunate that he should have been thrown into communication with a man like Dr. Hooker, who, although undoubtedly scientific, may perhaps be at the same time rather over-sensitive. The consequence has been that there has been nothing but heart-burnings, bickerings, and bad feeling between them since these two gentlemen came into official communication, or, perhaps, I should rather say collision. I intend to touch but lightly on the principal points in the dispute. Dr. Hooker writes to the Board of Works to know what his duties and his responsibilities are with regard to the warming apparatus, and the answer he gets is that he is to take his orders from the First Commissioner of Works, and it concludes with the unnecessarily offensive expression—an expression that would cause a man of far less sensitiveness than Dr. Hooker to take fire—"and that he is to govern himself accordingly." Then there is a dispute as to the tropical orchids, and I must say the First Commissioner here shows himself not only audacious, but orchidaceous. A long correspondence ensues upon this subject, and, as has been already remarked in one of these letters, this is the way in which public money is consumed in disentangling the science of botany from business matters. I wish to hold the balance evenly between all parties. I think that Dr. Hooker here acted intemperately. I think he had no right to accuse the First Commissioner of evasion, misrepresentation, and mis-statement. I think that is a very hard thing to say of the First Commissioner, for with all his faults we love him still. After this most extraordinary part of the business there appears a memorandum dated July 24, 1872, which occupies fourteen pages. It is from the First Commissioner of Works as to the management of Kew Gardens, and it contrives to stick additional pins into Dr. Hooker. Let the House, beware lest by reason of this appendix we are to have the South Kensington business over again, and lest at this very time we should be engaged in constructing a Cole-cellar for the growing of tropical plants at South Kensington. I think Dr. Hooker, although a very sensitive man, has much to complain of. I think, further—to reiterate what I said some little time back—that the right hon. gentleman the First Commissioner of Works is a valuable public servant; and, as I wish both gentlemen to retain their stations, I would advise them to read that scene in the "Beggars' Opera," between Peachum and Lockitt, where they each say, "Brother, brother, we are both in the wrong," and let them in future endeavour to forward the public service by keeping on good terms with one another.

Mr. Ayrton.—When he succeeded to his office, the Treasury, and in fact the House of Commons, had long been contending against what was conceived to be a very grave error in the administration of matters connected with works—namely, that the House and the Treasury were constantly led into sanctioning the expenditure of money on works, and after that money was spent it was discovered that they had not got to the end of the work, but were only embarked in its beginning, and that large additional sums were again and again required before it was completed. No one contended against that system more than he had done before he was connected with the Department. Well, it so happened that an estimate being placed before him, a request came from Dr. Hooker to spend more than

double the sum sanctioned for that work. He, therefore, asked for certain information as to how it was that a request had been made for sanctioning a smaller sum, when so much larger a sum was required, and how that fact had not been brought forward at an earlier period, as he thought it should have been in the proper conduct of business. That, however, was proclaimed to be a grave censure on Dr. Hooker. It was nothing of the kind; it was only a request for information on those points. The mission to St. Petersburg was proposed before he was First Commissioner, and he had nothing to do with it; but when a gentleman was so sensitive about the language employed, he must remark that Dr. Hooker was capable of using, in the most gratuitous and uncalled-for manner, language of the most offensive kind. An illustration of this was furnished by the letter he wrote in consequence of the decision at which the Treasury arrived about the proposed mission. The Treasury informed him, through the late First Commissioner, of their decision, without stating the grounds for it; and, not knowing whether the head of the Government, or the Chancellor of the Exchequer, or the whole Cabinet had given the decision, Dr. Hooker wrote most offensively to the Treasury, saying he did not know whether its conduct was due to ignorance, negligence, or disregard of scientific progress. Of course, no notice was taken of the letter of Dr. Hooker, because he was one of those excitable gentlemen who did not make themselves amenable to the ordinary courtesies of society. A gentleman who could write a letter to the Treasury, in which he said "he did not know whether the decision of the Treasury would be regarded as indicating indifference to the position which he held in this country, or an ignorance of the eminent men who had convened the Congress, or a disregard of international courtesies in scientific matters," had no right to be hypercritical on language addressed to himself. Unfortunately, his hon. friend the member for Waterford had thought it right to refer to another topic which he thought might well have been passed over. A number of philosophers or scientific gentlemen thought proper to send a letter to the Treasury with reference to this matter. Those gentlemen claimed for themselves great weight and great authority. No doubt they were gentlemen who were eminent for their knowledge of organic and inorganic matter. They had applied their minds to various branches of natural science, and in consequence thought they were infinitely superior to himself. He did not wish to pride himself upon anything. He was but a humble member of a profession which prided itself on studying and practising a science far higher and deserving far more consideration than the science of organic and inorganic matter, that great science of the law which had so often regulated the relations of man to man and taught people to judge righteously and act justly. Had there been among these professors but one barrister of a year's standing, or even but one pupil of a year's standing, he would have taught them that wisdom which would have astonished them amazingly, viz., the cardinal principle that before forming an opinion on any person's conduct they must be assured of the possession of all the facts. To judge by their practice these gentlemen appeared altogether ignorant of that principle, having arrived at a hasty conclusion on shoddy reasoning and an imperfect investigation of facts. Without troubling themselves to inform themselves of the facts on which alone a proper conclusion could be arrived at, these professors wrote a scurrilous and calumnious libel upon him. He had made some researches as to its authorship, but there appeared great delicacy as to the responsibility for its publication. He thought a correct opinion had been formed that the abuse contained in it was what any public man with duties to perform must expect at the hands of those disappointed with the course he pursued. What was the origin of the controversy? Dr. Hooker was by law a subordinate officer of the Office of Works, the Commissioners alone being, by Act of Parliament, invested with the management of Kew Gardens. By law, therefore, he had no status whatever, but was an executive officer of the Board, responsible to them. The very letter in which he was informed of his appointment stated that he would be required to give his exclusive time and attention to the duties of the office of Director, and to observe strictly such orders as he might from time to time receive from the First Commissioner. The published papers showed that his predecessor, Sir W. Hooker, was subject to the most peremptory orders by the First Commissioner, even in matters which might be supposed peculiarly under his control, as to the cultivation of the gardens and laying out of the grounds. Dr. Hooker had been addressed from time to time in a most peremptory manner, so peremptory that he admitted having been quite disconcerted on making a well-considered proposal on some matters of cultivation because the First Commissioner shook his head at him. There could not be more complete dependence than that. This having been the legal and actual state of things, how could Dr. Hooker complain of his continuing to exercise the power? Now he expected, before the debate commenced, that the Government, having definitely

decided to make no change in the administration of the gardens under the Office of Works, leaving the question open till the erection of the museum, that there would be an end to this contention, and the business would go on as heretofore, Dr. Hooker being regarded, as he had always regarded him, as head of the department, and receiving, of course, from him all the consideration due to his botanical knowledge and the experience he might have gained in carrying on the affairs of the department. Dr. Hooker, doubtless, in a moment of irritation and vexation at finding he was not likely to accomplish his end, wrote a letter to his right hon. friend's private secretary. His right hon. friend at the head of the Government had written a letter which would have satisfied and gratified any one in the public service, but finding Dr. Hooker not satisfied, he went further than he had perhaps ever done on a similar occasion, saying, "You had better go to my secretary, and perhaps he will be able to arrange the matter with you to your satisfaction." To the secretary Dr. Hooker accordingly went, and any one aware of Mr. West's ability, experience, and conciliatory manner must know that nobody better qualified for the duty could have been selected. It was a great thing for a Minister of the Crown to take such trouble to satisfy a person occupying such a subordinate position. What sort of conduct, he should like to know, was it that a subordinate should, in the first place, lodge a charge with an individual in whose keeping he knew it would be wholly confidential, and that, after he had negotiated with the Government on an entirely different basis, he should then endeavour to revive that charge, and, when he did so, never venture to assert one single fact in connection with it? For in the paper signed by those professors, although they made a charge, they did not state the facts by which they said it could be sustained. If he were to do justice to their intelligence, he would say that they never had any facts before them by which the charge could be supported. But if he were to do justice to their inconsiderate conduct, he would say that they were meddling with a business which did not concern them, and with respect to which they did not possess adequate information. Let the House just observe the nature of this charge, as also of that which had been solemnly preferred against him in another place. Both charges were the very opposite of one another. The charge which had been made in another place was, that he, conscious of his own knowledge and capacity, had been overbearing towards a subordinate officer. Such was the charge which it was attempted to support by those frivolous details to which he had called the attention of the House. But the charge made against him by Dr. Hooker was, that he had been guilty of evasion and misrepresentation, and of all those errors which were used by a slave to escape from the anger of his master, but which a master conscious of his power was not in the habit of exercising against a slave. If he were a person who was, as had been represented, so overhearing and conscious of his power, he would not have resorted to evasion and misrepresentation, and all those tricks which persons conscious of their weakness found themselves compelled to adopt. But there was, in point of fact, no foundation for the charge. As matters now stood, a grave charge had been made against him by a subordinate officer, against which it was incumbent upon him to defend himself, and the ultimate result of which he would not now anticipate, more especially as it was not his intention to take any part in its final solution. The charge had been made against him in a communication to the First Minister of the Crown, and his duty in the matter was performed when he drew his attention to it, and he had no doubt that the right hon. gentleman would perform his duty also with respect to the subject. No doubt Dr. Hooker had performed important duties as a botanist—he distributed thousands of interesting plants to persons who made botany their study, but he had done so in the discharge of a public duty, and it would be a grave reflection upon the botanists of this country if it were to go forth that there was only one person competent to undertake the office now held by Dr. Hooker. He might further add that it would be fatal to the public service were it to be assumed that any person occupying such a position was entitled to censure the conduct of his official superior, and to dictate to the Government under which he held office.

Mr. Gladstone.—I cannot refrain from expressing the deep regret with which I have listened to this discussion. From the first moment I heard of the differences that had unfortunately arisen between my right hon. friend and Dr. Hooker, I felt that the matter was not one in which I was officially bound to interfere in my personal capacity. Indeed, it would be impossible for me personally to undertake the responsibility of settling all difficulties which might arise between Ministers and servants of the Crown acting under their directions. Feeling, however, that much mischief would be likely to accrue were this matter to be allowed to run the usual official course, I did make an effort to bring the dispute to a satisfactory termination. In that endeavour, however, I entirely failed, and my private secretary, Mr. West, full as he is of kindness, also failed in achieving that

object. There was one other subject to which it would have been my duty to refer, and I will just mention it—namely the special charge which has most unfortunately and unhappily been brought by Dr. Hooker against my right hon. friend of "evasions and misrepresentation." That charge is, undoubtedly, a fact of the gravest character. But here I will express a belief more favourable to Dr. Hooker than that of my right hon. friend. That charge was conveyed in a letter which Mr. West very prudently, as I think, treated—I will not say as waste paper—but as a document which ought not to have become part of the communications on this subject. Afterwards, to the great surprise of my right hon. friend, he learnt from leading articles in the newspapers that this charge had been made. He brought it under my notice. I inquired where was it found, and discovered that it was in this private letter. It was a letter written to Mr. West, who was communicated with in his own personal capacity as one actuated by a friendly feeling between man and man. I am convinced—unfortunate as the publication of this letter is—that it is totally impossible it could have been done by Dr. Hooker's agency or permission. I am bound also to add that the charge having been made, the whole House will see that it is absolutely necessary, if it cannot be sustained, that it should be distinctly and unconditionally withdrawn, and that regret should be expressed for its having been made. I feel that it would be the wish of Dr. Hooker himself, and in that hope I will say that I think both these distinguished gentlemen may be able, without painful feeling on either side, to continue their co-operation in the public service. I must say that I think scientific men, as they are called by the exclusive appropriation of a title which I must protest against, have a great susceptibility. It is natural that it should be so. But independent of that, those who are not accustomed to enter into our sturdy conflicts take reproach in a much more serious manner than we who are accustomed to it do. I have heard from my hon. friend the member for Maidstone that, owing to the illness of Dr. Hooker, it was not possible to have a communication from him this day which I had hoped would put an end to this controversy. Dr. Hooker must feel that while this charge stands against my right hon. friend the existence of official communications between them cannot be other than momentary. I do hope that he will be inclined to take a practical view of the question. Those who have heard my right hon. friend are I am sure convinced that his desire is to do his duty, and those who have known Dr. Hooker and his character will, I am certain, have exactly the same conviction of him. Well, let us say to Dr. Hooker and my right hon. friend, if personal matters can be disposed of in the only way they ought to be disposed of—namely, in the way I have pointed out—let us say to them—"Bury in forgetfulness the recollection of those differences," and if that can only once be done there will, I am sure, be no competition between such men except the anxiety of both to do their duty to the public, my right hon. friend exercising his rule with mildness, and Dr. Hooker doing his duty in subordination to my right hon. friend.

HARDY PLANTS IN FLOWER ROUND LONDON.

(FROM AUGUST 8TH TO AUGUST 14TH, INCLUSIVE.)

BY OUR OWN REPORTERS.

<i>Æsculus</i>	<i>Delphinium</i>	<i>Liatris</i>	<i>Scutellaria</i>
<i>macrostachya</i>	<i>vestitum</i>	<i>elegans</i>	<i>macrantha</i>
<i>Aucullus</i>	<i>Dicentra</i>	<i>Lilium</i>	<i>Sedum</i>
<i>strigosus</i>	<i>chrysantha</i>	<i>speciosum</i>	<i>atropurpureum</i>
<i>Anthemis</i>	<i>Diplostephium</i>	<i>Lychuis</i>	<i>maximum</i>
<i>Weidmanniana</i>	<i>umbellatum</i>	<i>altaica</i>	<i>Sibthorpia</i>
<i>Antirrhinum</i>	<i>Doryenium</i>	<i>grandiflora</i>	<i>europæa</i>
<i>rupestris</i>	<i>herbaceum</i>	<i>Madaria</i>	<i>Silene</i>
<i>siculum</i>	<i>Galatella</i>	<i>elegans</i>	<i>Tenarium</i>
<i>Aster</i>	<i>punctata</i>	<i>Mimulus</i>	<i>Solidago</i>
<i>asiaticus</i>	<i>Geranium</i>	<i>glutinosus</i>	<i>lanceolata</i>
<i>Aucullus</i>	<i>canariense</i>	<i>Molina</i>	<i>multiradiata</i>
<i>assyriacus</i>	<i>Gypsophila</i>	<i>cærulea</i>	<i>puberula</i>
<i>diffusus</i>	<i>sibirica</i>	<i>Nolana</i>	<i>reflexa</i>
<i>patens</i>	<i>Helianthus</i>	<i>grandiflora</i>	<i>Sphenogyne</i>
<i>panicus</i>	<i>Hookeriianus</i>	<i>Gnothera</i>	<i>antelmoides</i>
<i>rigidus</i>	<i>Maximiliani</i>	<i>canariensis</i>	<i>Stipa</i>
<i>sibiricus</i>	<i>trachelifolius</i>	<i>tubiflora</i>	<i>Culmagrostis</i>
<i>simplex</i>	<i>Hydrangea</i>	<i>Oxalis</i>	<i>Thymus</i>
<i>Calla</i>	<i>paniculata</i>	<i>odorata</i>	<i>Mastichina</i>
<i>palustris</i>	<i>grandiflora</i>	<i>spectabilis</i>	<i>Tigridia</i>
<i>Campanula</i>	<i>quercifolia</i>	<i>tetraphyllus</i>	<i>Pavonia</i>
<i>Eriurus</i>	<i>Inula</i>	<i>variabilis</i>	<i>Tuna</i>
<i>Cistus</i>	<i>Oculus</i>	<i>Panicum</i>	<i>Fouillei</i>
<i>lusitanicus</i>	<i>Christi</i>	<i>violaceum</i>	<i>Valeriana</i>
<i>Coreopsis</i>	<i>Kœlreuteria</i>	<i>Pentstemon</i>	<i>montana</i>
<i>Drummondii</i>	<i>paniculata</i>	<i>brevidorus</i>	<i>Zephyranthes</i>
<i>latifolia</i>	<i>Lavandula</i>	<i>Polygonum</i>	<i>Atamasco</i>
<i>Daphne</i>	<i>dentata</i>	<i>amplexicaule</i>	<i>candida</i>
<i>oleifolia</i>			

Plants in this list are almost without exception such as have come into bloom during the past week.

GARDEN DESTROYERS.

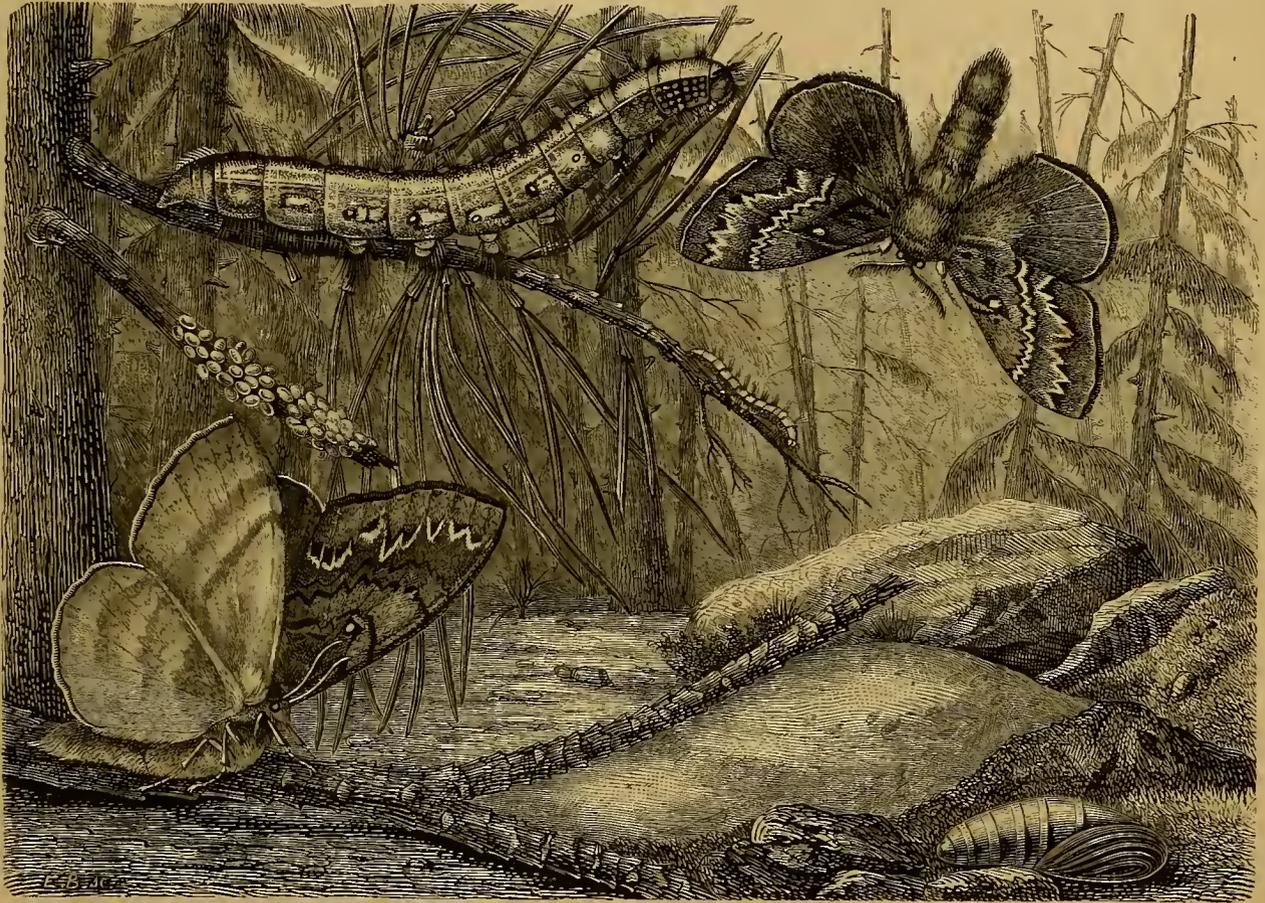
BOMBYX (LASIOCAMPA) PINI.

The moth which we are about to describe would scarcely find a place in our pages were we to confine our notices of insect enemies to those which occur in Britain. But it is our aim to communicate all such information on these matters as may be of interest to the British gardener, whether it relates to Britain or not, and we should ill fulfil the task we have proposed to ourselves were we to refrain from making our readers acquainted with the present species, *Bombyx pini* (with which every one in Germany is familiar as one of the greatest scourges to the pine tree), merely because it has been rarely found in Britain.

This, as it is the largest, is also probably the most destructive

words of Kollar will answer equally well:—"Those who have seen the ravages of the great swarms of caterpillars of this moth cannot sufficiently express the melancholy and lamentable appearance produced on the trees by the injuries they commit." Leaving these irregular periods of abnormal multiplication, we shall simply describe the even tenor of the life of the insect in its ordinary phases.

In the first place the female lays her eggs in July or August. These are of a roundish shape, pale green, and rather large. She lays from one hundred to two hundred, generally irregularly, either in flat heaps or clustered round a twig. This clustering of the eggs round the twig is characteristic of most of the Bombyces. It is the same kind of instinct as that which gives rise to the necklace or bracelet cluster of eggs of the lackey moth or the eggs covered with mouse-coloured fur of the small eggar (*Eriogaster*



Bombyx (Lasiocampa) pini.

of all the insects that attack the pine tree. In north and mid Europe, Germany, Poland, and Russia, it is constantly present, and always doing more or less damage. But now and then some cause stimulates it into unusual fecundity, and then the ordinary course of its life and habits seems to undergo a change and increased power of production to be conferred upon it. The normal course of changes by which the egg, the caterpillar, chrysalis, and perfect insect succeed each other in regular sequence is no longer observed, and eggs, caterpillars of every age, pupæ, and moths occur all at the same time and on the same tree throughout the whole summer. On such occasions we have astonishing accounts of their vast numbers, and we could refer to statistics with long rows of figures showing the number of quarts of caterpillars, cocoons, and moths that have been collected per acre in certain districts. We shall not trouble the reader with these; the simple

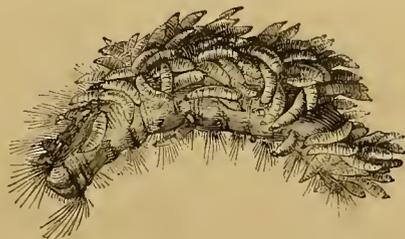
lanestris). The caterpillars take about a fortnight to hatch. As soon as they come out they at once betake themselves to the foliage, which they consume voraciously. By the end of autumn they have reached an inch or an inch and a half in length; but they have to grow to about three times that size before they pass into the pupa state, a full grown caterpillar measuring three and a half to four inches long; and as the cold of winter prevents them feeding during that season, they retire into crevices and under the moss on the ground, and there hibernate. When spring returns they leave their winter quarters and again ascend the trees and recommence feeding. They continue thus occupied until June or July, when they change their skin for the last time and pass into the pupa state. The pupa is about an inch long, and of a dark grey colour in front and dark brown behind, and lies in an oval yellowish web, which is suspended on the bark and bare twigs

of low bushes and trees. They remain there for about three weeks, when the moth emerges.

The colour of the caterpillar is dark grey above with whitish and brown stripes and lozenge-shaped spots along the back and sides. As it gets older the white predominates more and more; it is pubescent or downy, and, besides, bears long tufts of hair on each segment, thickest on the last, varying in colour from reddish or brown to grey. The head is yellowish-brown, and two bluish stripes are displayed lying between the two first segments when the caterpillar bends down its head. The underside is orange-yellow with brown spots.

The colour of the moth is very variable, the chief tints, however, being grey with rusty bands and a brown patch surrounding a white spot on the disk on the upper wings, and reddish-brown under wings. The upper figure in the woodcut represents the male, the lower one the female, both of the natural size. It will be seen that the upper wings are divided transversely by three or four jagged bars. The inner and middle ones are reddish-brown, the outer ones grey. The underside is brownish-grey; the depth and hue of colour varying, however, so much that a long series of specimens is necessary to show its range. It runs from deep claret or rust-coloured red to pale ashy grey.

The special food of the caterpillar is the Scotch fir—Kollar says it confines itself entirely to it and the Austrian pine; but Loudon mentions its attacking the Weymouth pine, and Ratzburg says he has observed it also on the larch and on the spruce. Fortunately, it has a goodly proportion of enemies and parasites that serve to keep down its numbers by attacking it in every stage—egg, larva, pupa, and perfect insect. The eggs are pierced by the *Ichneumon ovulorum*; the caterpillar is attacked by *Microgaster globatus*, the eggs of numbers of which are deposited in its body by the parent flies, and these gradually consume the interior of the caterpillar, carefully abstaining at first from the more vital parts (which are doubtless avoided as being tougher, less juicy, or less palatable), but at last they attack them too, when they and their "host" are nearly mature. The caterpillar then succumbs, and the larvæ of the *Microgaster* emerge from the body of their victim and spin their cocoons, and pass into the pupa state on the field of battle, that is, on the body, or, we should rather say, empty skin of the caterpillar. Our figure shows them so clustered



Pupæ of *Microgaster globatus* on the Caterpillar of *Bombyx ipni*.

round the theatre of their labours or scene of their past life, and will give the reader some idea of the numbers which attack and pass the first stage of their existence in a single individual. Various other ichneumons perform a similar task, as *Pimpla mussii*, *P. graminellæ*, &c. The pupa is in a like manner attacked by *Anomalon circumflexus*, *Pimpla instigator*, *Ichneumon puparum*, &c., and from the moths, in like manner, proceed *Tachina bimaculata*, *Musca stabulans*, *M. 5-vittata*, and others. It has been said that when this *Bombyx* increases so much as to become seriously injurious, the mischief usually lasts for three years, and that it is then stopped by the parasitic flies of which we have been speaking, they increasing with the increase of the *Bombyx*, which supplies them with food until they outstrip its progress and in turn almost extirpate it in about that time.

The plans adopted by man to control its numbers are the usual ones of collecting and destroying the insect in its various stages. The stage in which it is most easily dealt with is while in the pupa state, for, preferring to place its cocoon on low twigs, it is easy to supply such a decoy trap, and the twigs can then be brought together and burnt with the pupæ upon them.

A. M.

LONDON TO THE FORE.

THERE are various indications, says the *Saturday Review*, that a change has of late been coming over the spirit of London. For the present, Paris is clearly out of favour, and the throng of travellers and pleasure-seekers is accordingly directed to this side of the Channel. There are whole quarters of London which the invaders seem to have taken by storm. An American will meet almost as many known faces in Bond Street as in Broadway. There were some weeks lately when Americans were arriving in hundreds at a time. And from all parts of our own country the rush to town is more universal than ever. If Dives comes for the season, Lazarus contrives to snatch a few days by a cheap excursion. Everybody who makes money comes to London to spend it. During the season just ending, it was impossible not to be struck by a certain brightness and glow of colour in the western parts of the town; masses of flowers in the windows and balconies, trellis-work with festoons of *Wistaria*, *Clematis*, or *Virginian creeper*; gossamer lace looped up with silken bands of cerise or purple, gay verandahs and striped awnings, and occasionally the line of glistening snow-white houses broken by a red brick wall in the old fashion, picked out with white. Mr. Ayrton's friends the gardeners must be practically reversing the story of the fairy gold that turned to leaves, and qualifying rapidly for residence in the mansions they adorn. At an evening party the exotics will sometimes cost, it is said, several hundred pounds, and the hanging gardens of Belgravia and South Kensington, renewed from week to week, must represent a handsome revenue. We have a notion that not very long ago the display of flowers outside a house was regarded as the height, or rather the depth, of vulgarity, a kind of flaunting, unabashed Cockneyism which wanted only a linnet or canary in a cage to make it complete. The mignonette boxes have given place to fine majolica troughs, overflowing with the most brilliant blossoms. The old English love of colour would seem to be reviving. The red brick houses coming, or returning, into fashion are one sign of it, the rainbow hues of the ladies' dresses another. The *teints dégradés* of Paris have been almost blushed down this summer by the full-bodied, ripe colours of native choice. At the Academy the ladies make the walls look dull. The sea of colours at a fashionable wedding or garden party, or at the morning promenade of the Row towards Ascot time, is dazzling in its chromatic boldness and variety. Altogether out-of-door life is becoming more brilliant and demonstrative. The Marquis of Westminster's experiment with Ebury Square, which is to be converted into a public flower garden, will probably help to bring more colour into the streets. If the experiment is successful, we shall no doubt before long see other oases planted in the weary desert of bricks and mortar. Some day the poor little orange trees in big tubs, which with the other humours of Trafalgar Square—the elaborate squirting of the fountains, and Nelson mast-headed for his victories—afford so much innocent amusement to our foreign guests, may give place to more ambitious horticulture, and a cool umbrageous garden may be substituted for the burning waste of dingy asphalt. Mr. Ayrton might make amends for his exuberance of savage virtue by taking up this idea, and asking Dr. Hooker to carry it out for him; and the reconciliation might be commemorated by a majolica fountain or a piece of sculpture representing the Edile and the Doctor clasped in a fond embrace. One can imagine the scornful incredulity of the Parisians on hearing that the city of fogs and rain, of spleen and suicide, has any pretensions to be considered a city of pleasure, and it may be admitted that London will have plenty to do before in some respects it makes itself as pleasant and attractive to strangers as Paris is. It is naturally out of door life with which visitors are most concerned, and it is difficult to imagine anything more wearisome and exhausting than the perambulation of our streets under present circumstances. Tourists are only creatures of flesh and blood like the rest of us, and the noblest architecture fails to satisfy the cravings of their animal nature. Opportunities for repose and refreshment form a considerable element in their ideas of enjoyment. But the unhappy stranger who has turned his back on Charing Cross or Regent Street; and is on his way westward, soon finds to his dismay that he has got altogether beyond the range of cafés and restaurants. There are, it is true, a few benches on one side of Piccadilly, and of course there are plenty of seats in the Park on which he can rest his weary limbs; but if, in addition to rest, he happens to desire some slight refreshment, a biscuit and glass of wine or cooling draught of seltzer, he is doomed to disappointment and despair. He has no chance of obtaining anything except at the reeking bar of a public-house, in a throng of grooms and stable boys. At some of the park lodges what is supposed to be curds-and-whey and some other remarkable delicacies are on sale; but we should expect to be told that the British Constitution would suddenly tumble to pieces, or that something equally dreadful would happen, if any place were to be established in Hyde Park where an ice or a glass of wine could be obtained on a hot day.

COTTAGE GARDENS IN IRELAND.

BY NOEL HUMPHREYS.

ONE of the many characteristics which a traveller notices on arriving in Ireland by the route of Holyhead and Kingstown, is the comparative absence of flowers in the cottage gardens, and even in those of most of the villas. The gay masses of geraniums, calceolarias, and verbenas which one has left behind at Bangor, and all the pretty sea-coast towns of North Wales, no longer greet the eye in such profusion after crossing the sixty miles of sea that separates us from the coast of Ireland. The windows of Irish cabins, if windows there be, are seldom graced by a flower, not even a solitary fuchsia, nor that old favourite geranium with variegated foliage, which is so seldom absent from an English cottage, however humble.

Of course there are exceptions to these somewhat sweeping remarks; yet, as a rule, it is plainly evident that there is but small love of flowers among the Irish peasantry. How is it that the civilising influence of flower culture has never taken root among the masses of the Irish people? It cannot be that the pure Celtic race has no instinctive taste for inanimate beauty; yet the fact remains, that Ireland is not a land of flower culture. The bit of potato ground is never decorated with so much as a tuft of marigolds, or a rose bush, or a patch of gay *Eschscholtzia*, near to the house; and one never sees the homely everlasting pea, or the starry-flowered jessamine clustering about a cottage door, to say nothing of a China rose, or a sweet scented Clematis, all of which, in their turn, are so universally to be found trained about the entrances of the humblest cottages of our English peasantry. Even the abodes of the wealthy in Ireland often exhibit an absence of floral display of any kind, where in England they may be said never to be absent, as, for instance, about the entrance lodges of country seats, which with us are generally made so gay and attractive with a pretty little flower garden, in which the lodge-keeper takes especial pride, and in which, during all the summer months, mignonette and sweet peas, and the trailing honey-suckle about the trellised porch, greet the visitor on his first entrance with such delightful minglings of the sweetest odours—while about the entrance lodges of the country seats and best suburban villas of the Irish gentry there is, on the contrary, with few exceptions, a total absence of flowers, which gives them an aspect of coldness and desolation that is very discouraging. And yet it is not because flowers and flowering shrubs will not grow—for here, where I am writing, in the coast village of Rosscarberry, in the south-west, I noticed plants of old fuchsias growing to a height of ten or twelve feet, and flowering profusely; and though instances of the culture of ornamental shrubs of any kind, either here or elsewhere, are few and far between, yet they are sufficient to prove that the climate is highly favourable to the growth of flowers and flowering shrubs; as is, indeed, made evident also by those interesting relics of the accomplished Sir Walter Raleigh's love of gardens and flowers, namely, the myrtles which he planted at Youghal after his return from Spain, and which are still flourishing—their ancient trunks having attained dimensions as thick as those of small forest trees.

Encouragement might do much to foster a greater love of flowers; but I have not as yet met with a single announcement of a cottage flower show, with prizes for the most successful cultivator, since I arrived in this country some weeks ago. Absenteeism may have something to do with the absence of the encouragement alluded to—the cultivated classes being so many of them away in London, or on the Continent just at the season of flowers. These arrangements of the London season, which take people from the country just at the time when it is the most beautiful, seem very absurd, but the power of the great blind giant, Routine, seems irresistible; and there is also the ready answer that fashionable life in London would be intolerable at any other time. The French, however, manage matters better; country magnates with their families flock to Paris in November, when the leaves have fallen, and the flowers are faded, and the pleasures of the harvest are over; and they enjoy the gaieties of Paris at a time when they lose comparatively little of the beauties of the country—rushing back, as they do, to the "vie de château" with the first sunny days of April or

May. But to return to the absence of flower-love in Ireland. I may observe that throughout the holdings of the small tenantry of a large estate, not very far to the east of the exquisite scenery of Bantry Bay, I did not find the windows of a single cot or cabin made gay by the presence of a flower; nor in any one of the bits of potato and cabbage ground, with which most of them are surrounded, did I find any instance of the embellishment of the strip of garden with a few flowers. No tiny flower border beneath the window, to send sweetness into the room which serves as "parlour and kitchen and all," and too often as pigstye likewise. Nothing, in short, was attempted in the way of gardening, but the hard, rude struggle to produce cabbages and potatoes sufficient to secure a scanty supply of vegetable food to carry the family, generally a pretty numerous one, through the winter. So far, indeed, their gardening operations are tolerably successful, for the soil is good, and the climate beautiful, but the ornamental—even in the smallest degree—is utterly ignored.

One would think that the beautiful wild flowers which abound in every field and on every rock, and that do not disdain the scanty earth lodged in the crevices of the rude stone walls, would necessarily awaken the dormant instincts which exist in every human organisation for the appreciation and love of the beautiful things of nature. But the awakening does not take place here. The beautiful lesser scabious, that fringes the tops of the rugged walls with azure, makes the barbarous masonry beautiful, in vain. The glories of the orange chrysanthemum that sparkles among the corn, and is well worthy of a place in any garden, the soft turquoise tone of the greater scabious, the bright hues of the purple heather, and the pink, and crimson, and white of the ericas, with the many varieties of hypericum, and the bright yellow masses of the ragwort (which grows so finely in Ireland), none of these appear to attract a passing thought, so all-absorbing is the struggle to obtain a sufficiency of the bare necessities of life, and if by stint and self-denial a little surplus can be realised, the dream is, not of flowers, but of emigration to America. So that flower culture as a national taste has at present but little chance of becoming a characteristic of the Irish people, at all events on this side of the Atlantic.

THE INDOOR GARDEN.

ALLAMANDAS.

THESE beautiful plants, which produce a profusion of yellow flowers, are commonly grown in pots and trained on trellises; but this mode of training them, unless for exhibition, is a very objectionable one. Nothing repays a little care better than the Allamandas, and anyone seeing them grown to perfection as climbers would never think of growing them on low trellises. They will grow freely under almost any circumstances if they receive a little heat to start with and a free supply of water at the root and overhead when growing. The finest plant of *A. grandiflora* I ever saw was grown in a house used in spring for starting plants that had been at rest during the winter. The house had side shelves all round and a broad bed in the centre, with a good depth of cocoa-nut fibre for plunging material heated by hot-water pipes. This bed served also as a propagating pit, and at each end was placed a box about two feet broad and the same in depth; the bottoms of these were covered with four inches or so of brickbats and crocks, and over these a layer of rough turf was placed. In these boxes the Allamandas were planted—at one end was a plant of *A. grandiflora*, and at the other one of *A. Hendersonii*.

Throughout the winter they were kept rather dry, but not absolutely so, and in early spring, when the bottom heat was applied to the beds, they were gradually supplied with a greater amount of moisture. The syringe was freely applied to the breaking wood where it could be done with impunity to the subjects underneath, and after a short time they made rapid and satisfactory progress, breaking equally all over. No stimulants were applied for the first two years after planting until the flowers were set; but in the spring of the third year, the roots becoming rather confined, it was found necessary to top-dress the boxes with good loam and well-rotted manure, which was applied in large rough lumps, and removed in the winter to be renewed again the next spring.

In the summer-time no bottom heat was maintained; but for the sake of Camellias, Azaleas, Oranges, &c., that were grown under their shade for the production of young wood, a little extra heat was

always kept up. It is difficult to imagine the beauty of these plants from May until late in the autumn, for they not only grew vigorously, but as they grew they produced a great profusion of bloom. It required a good deal of work to keep the shoots tied and thinned, for although it is not customary to have to thin out their shoots, here it was quite necessary, for so thickly did they annually overlap each other that leaving them alone would have brought destruction to the blooms. After they had gone to rest they were cut back a good deal, but not completely so, for a little more than was absolutely necessary was left to be cut away in spring, when the fresh start was made, as then it was more certain work. In this condition *A. grandiflora* quite outstripped *A. Hendersonii*, for the latter, being a stronger grower, was not so compact in appearance, nor did it produce such a mass of flowers; yet I never saw a finer specimen of either, nor yet a greater quantity of bloom produced on any one plant than these two plants produced individually. Throughout all their blooming season they were liberally supplied with manure water, which was discontinued some time prior to their being dried off. W. F.

CULTURE OF ACHIMENES.

NEARLY all the varieties of *Achimenes* deserve to be ranked with the most beautiful and useful ornamental plants which our glass houses possess. Their flowers, which are of many delicate and pleasing shades of colour, are produced in great abundance for months in succession, and the plants themselves are by no means difficult to cultivate. While in a growing state they require the assistance of a rather warm and moist atmosphere, but during their flowering season they may be removed to a cooler and drier situation, such as a close greenhouse or conservatory, where they may be said to be indispensable during the summer and autumn months. As all *Achimenes* increase rapidly by means of their scaly tubers, artificial propagation is almost unnecessary, except in nurseries, where it is perfectly understood. I shall, therefore, merely state that cuttings of the young wood, treated in the ordinary way and placed in a brisk bottom heat, will root freely. Taking it for granted that in early spring there is a supply of tubers at hand, they should be separated from the soil in which they have been wintered, and planted in shallow pots or pans (the latter are preferable) well drained, and filled with light sandy soil to within two inches of the top. The tubers should be laid rather thickly and regularly upon the surface, and covered with mould to the depth of an inch, or as much more as the pan will hold. Water should be sparingly applied, only just sufficient should be given to keep the soil in a moist state. If active growth is desired, without loss of time, plunge the pots or pans in a gentle bottom heat. When the plants are about three inches high they should be carefully lifted from the soil and potted in seven-inch pots, placing twelve or more plants in a pot, according to the sized specimens that may be wanted. After potting, place them in a close and rather warm atmosphere till they have become fairly established; a temperature of about 60° at night, allowing it to rise 10° or 15° with sun-heat in the daytime, will be found the most congenial to the plants at this stage of their growth. As soon as they have become established in their pots, air should be freely admitted on all favourable occasions, and the plants kept near the glass. If all goes on well they will soon fill the pots with roots, when a final shift will be necessary. The size of the pots for this shift should be regulated by the size which it is desirable the plants should attain; ten-inch pots will be sufficiently large where moderate-sized specimens only are required; but for very large masses, twelve or thirteen inch pots may be used.

Some first-rate cultivators prefer deep pans for *Achimenes*, but these are better suited for plants to be flowered in a moist warm house, than for those intended to be removed to the greenhouse or conservatory during the flowering season. About twelve plants may be placed in a ten-inch pot. It will be necessary to maintain a moist atmosphere, and keep the house rather close till the plants can lay hold of the soil, and water must be carefully supplied during this time, but the syringe may be used freely if the weather happens to be bright. As soon as the plants start into free growth after potting, air may be more freely admitted, and a slight shade during the forenoon of sunny days will be found beneficial. Varieties of the habit of the old pedunculata should be stopped as soon as they have become established in their flowering pots; and if it is intended to train them in a formal manner all the kinds should be staked before the shoots have become entangled. The stakes should be cut off at the height to which the variety is likely to attain; they should be so arranged as to form the framework of a handsome specimen, and the shoots should be kept carefully tied as they advance in growth. When it is supposed that the pots are filled with roots, an occasional watering with clear manure-water may be given. Indeed, I regularly

water my *Achimenes* with weak manure-water from the time they are well established in their flowering pots till the blooming season is over, and I think the plants are greatly benefited by this treatment. If it is intended to remove the plants to cooler quarters while they are in flower, they should be judiciously and carefully prepared for the change by giving more air, and gradually lowering the night temperature as much as circumstances will allow. When removed they should be placed in the warmest part of the house to which they have been transferred, and guarded from currents of cold air; but if they can be kept in an intermediate house, the flowers will be larger and the blooming season will be prolonged; still, a close kept conservatory will supply a suitable temperature, at least during summer and early autumn.

When they have done flowering, such as are not wanted may be thrown away, merely preserving about two pots of each variety for stock; these should be kept sparingly supplied with water, and if they can be removed to a warm dry house, the ripening of the tubers will be better secured than under other circumstances. Water must be altogether withheld as soon as the leaves assume a sickly appearance, and when the tops die down the pots may be removed to any dry situation, where they will be free from frost, and where they may remain till the tubers are wanted for starting next spring.

For soil, take light sandy turfy loam, peat, leaf-soil, and thoroughly decomposed cow-dung, in about equal proportions, to which add as much sharp sand as will insure a free percolation of water through all of the materials. The loam and peat should be used in a rather rough state; the dung should be broken up and intimately mixed with the sand before it is added to the compost. All the *Achimenes* are very impatient of stagnant moisture at their roots; therefore secure perfect drainage by using plenty of potsherds or lumps of charcoal; indeed, when pots are used, they may be one-third filled with draining materials.—*J. Smith.*

SOIL FOR A WINTER GARDEN.

Nor long since we saw a winter garden of novel construction, the central compartment of which had been planted with much skill. The structure was not large enough to allow of the formation of a winter garden in the natural style, such as we have described in recent numbers, but the grouping of the plants was harmonious, and the vegetation especially was of extraordinary beauty. The secret was evidently in the preparation of the soil. Knowing this, we inquired of the author the means which he had employed, and we desire to call attention to the following reply which we received from him:—"When I am about to plant a winter garden, I first trace out the walks. I then remove the soil from the flower beds to the depth of from 2½ to 3¼ feet, and put in a layer of faggots, rushes, or heath from twenty to twenty-four inches deep, well trodden down. I then fill up with the following compost, on the top of which I put ten or twelve inches deep of soil to compensate for the subsidence which ensues:—One-third good peat soil, one-third leaf-mould, one-third good alluvial soil which has fermented. To the above, I add seventeen pints of dried night-soil to the cubic yard, or the same quantity of manure *de la Mènière*. The peat soil should not be broken up too small, nor should the alluvial soil be sifted. After the planting is finished, I remove the soil from the walks to the same depth, and fill up with coarse vegetable refuse for the purpose of securing good drainage, and in order that those plants which require much nutriment may be able to push their roots in all directions, without starving the young plants and tender subjects near them."—*Illustration Horticole.*

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Dracena Fraseri.—This is one of the most striking of fine-leaved stove plants. Many of your readers are doubtless familiar with *D. regina*, which has broad leaves striped with green and white. *D. Fraseri* somewhat resembles *regina*, but instead of the leaves being green and white, they are fiery red and deep copper coloured. As a companion to *D. regina*, no plant could be more suitable or more effective.—*F.*

Trichinium Manglesii.—A neighbour, whom I visited a few days ago, had a lovely little plant of this *Trichinium* growing in a pot in a cool house. He told me that it was rather difficult to grow, and that, although generally treated as a greenhouse plant, in some places it does well out of doors. Its pretty terminal heads of pink flowers, however, make it a useful plant for indoor decoration. Perhaps some of your correspondents may kindly furnish a hint or two as to the best way in which it should be grown.—*W.*

***Primula japonica* Seed.**—Has any one yet succeeded in raising plants from the seeds of this *Primula* offered this spring? and are home-saved seeds of it likely to be so long in vegetating as those imported? or has any one plants from home-saved seeds? Is it not singular that the imported seeds should be so long in vegetating? Most *Primulas* vegetate in a comparatively short time. Is there any structural peculiarity about the seeds of this Japanese variety to hinder its vegetation? Two years is a long time to wait for half crowns growing into beautiful *Primroses*, and then if we are disappointed, it will be time, labour, and money lost.—*D.*

THE FLOWER GARDEN.

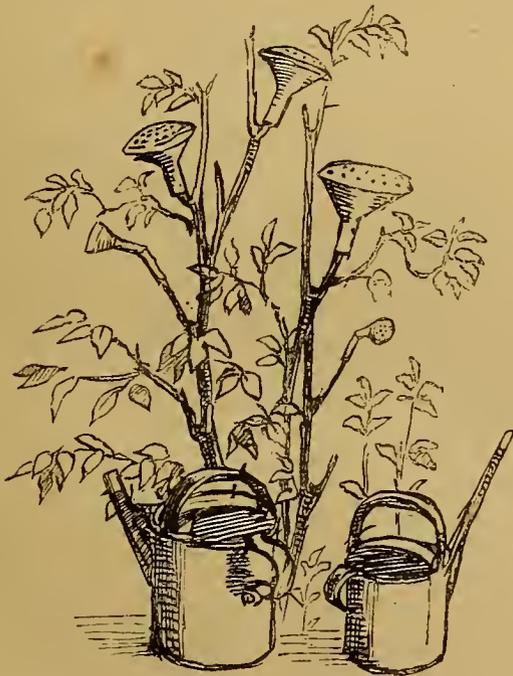
LAMIUM MACULATUM AUREUM.

This is one of the finest of golden-leaved plants for edgings. It does not withstand such full exposure as that which suits the yellow Feverfew, but in sandy or moist soils its peculiar tint is unequalled by that of any other hardy plant in cultivation, and if allowed to flower, its blooms are also very pretty. It does not require to be constantly trimmed like the Feverfew, and when once established it will flourish in the same position for years. In many places it is used for edgings fully a foot in width, and, owing to its deep orange colour and compact habit, nothing could be prettier throughout the winter. It is easily increased by means of cuttings inserted in a cold frame and planted out in March where they are to remain; a matter of some importance, for at that season all the room that can be had is required for plants of a tender character. Some of the other Lamiums form good mixed border plants, as they frequently sport into various variegated forms, notably *L. album*, of which I have had many curious varieties. At Marlow, in Bucks, about eighteen months ago, I found one with very double flowers, which promises to be a great acquisition to our stock of rock plants.

WM. ELLIOTT, *Beechmont, Sydenham.*

NEW ROSE—SOUVENIR DE LA CHALEUR (ROBINSON).

We do not usually attempt to represent flowers, "florist" or otherwise, in our illustrations, from the fact that we cannot reproduce their beautiful colours by means of the printing



press; but the variety alluded to in the following notes is so very distinct in form that we do not hesitate to give it in black and white:—

"CAUNTON MANOR, NEWARK, July 26, 1872.

"DEAR MR. ROBINSON,—Here is a portrait of a rose (on which this torrid weather has no power, and which makes its own rose-water), sent to me by a friend, with the following note.

"Yours truly, "S. REYNOLDS HOLE."

"WARGRAVE HILL, HENLEY-ON-THAMES, July 24, 1872.

"DEAR MR. HOLE,—You will, I know, be interested in a new kind of rose tree, which may now be seen in full bloom in the garden here, between the tool-shed and the pump. The sketch will give you some idea of this magnificent addition to the rose garden. It bears a profusion of bright scarlet blooms, some of which exceed six inches in diameter, while all are symmetrical and firm in character. I believe it was first introduced by those well-known nursery firms the Waterers.—Yours very truly, "HERBERT JEKYL."

THE EVENING PRIMROSES, OR CENOTHERAS.

THESE beautiful flowers are now in full perfection, opening out their large lovely sweet-scented blooms at or about sunset, and lasting, in almost undiminished beauty, till noon the next day. They are almost all of them of easy cultivation, and the humblest cottager can succeed as well with them as the wealthiest millionaire, if he will only try. The gem of the lot is the magnificent and comparatively new *C. marginata*, for the introduction of which we are, I believe, indebted to Mr. Thompson, of Ipswich. I have a large bed of it under my window, which nightly displays some forty immense white blooms, larger than the top of a tumbler, making the whole air sweet with their fragrance. Dotted about in the bed I have plants of *C. taraxacifolia*, also white and *C. macrocarpa*, yellow, with but little smaller flowers; and *C. cæspitosa* and *C. triloba*, with respectively white and yellow flowers, about the size of half-a-crown. These are all low-growing, creeping perennials, as is the smaller-flowered but very gay *C. prostrata*, most useful as an edging plant; and the still smaller but very pretty little *C. pumila*. If you want something a little higher, there is the beautiful annual *C. tetraptera*, with its large pure white flowers; and the perennial *C. speciosa* and *C. fruticosa*, the one with big blooms of snowy whiteness and the other cuffed with gold. Taller still are the biennial *C. biennis*, *odorata*, and *salicifolia*, the two former naturalised as British plants; whilst tallest of all towers up the magnificent *C. Lamarckiana*, its stem thick with blooms often as large as those of *C. marginata*, and only to be beaten, I hear, by the still grander *C. gigantea*, which I have never seen. These last five species are all yellow. Then there is the pretty little annual *C. rosea*, with flowers much resembling those of *Epilobium hirsutum*, and the white flowered *C. acaulis* and *anisoloba*, the former belonging to the *cæspitosa* and the latter to the *speciosa* type, which I shall be glad to receive in the form of cuttings or seed from any kind friend who will send them to me; and the yellow-flowered and rather tender biennial *C. canariensis*, much resembling *C. odorata*. There are other very beautiful and desirable species, about which, perhaps, some one who knows them better than I do will write.

H. HARPER CREWE.

The Rectory, Drayton-Beauchamp, Tring.

OLD-FASHIONED FLOWER GARDENING.

I WISH to arrange my garden in the old-fashioned way, with sweet-smelling and showy flowers that do not require taking up annually. Will you kindly tell me what plants I should require for this purpose? I want a great variety, as my garden is large and particularly effective. There are twelve or more straight borders, varying in width from half a yard, to one yard and a half, besides beds and very wide borders.—Yok.

[For spring flowering, take such plants as *Adonis vernalis*, *Alyssum saxatile*, *Auemone apennina*, *coronaria*, and *silvestris*, *Arabis alba*, *Asperula odorata*, *Aubrietias*, *Bulbocodium vernum*, *Wallflowers*, including *Cheiranthus Marshallii*, various kinds of *Crocus*, *Lily of the Valley*, *Dicentra eximia* and *spectabilis*, *Erica carnea*, *Erysimum ochroleucum*, *Ficaria grandiflora*, *Hepaticas*, different kinds of *Iberis*, *Iris nudicaulis*, *pumila*, and *reticulata*, *Snowdrops*, *Lithospermum prostratum*, *Myosotis dissitiflora* and *sylvatica*, *Orobis vernus*, *Daffodils*, *Phlox reptans* and *subulata*, *Ranunculus monspeliacus*, *montanus*, and the double blossomed *aconitifolius*, *Sweet Rocket*, *Scilla bifolia* and *sibirica*, *Triteleia uniflora*, *Tulips*, and *Violets*. For summer, the following are all good and ornamental, viz., *Acanthus latifolius*, *Achillea Eupatorium*, *Parmica pl.* and *Millefolium rosea*, *Aconitum japonicum* and *variegatum*. *Alstroemeria aurea*, *Anchusa italica*, *Antirrhinum*, *Aquilegia glandulosa*, *cærulea*, and *truncata*, *Aster pyrenæus*, *Baptisia australis*, *Betonica grandiflora*, the double-blossomed *Calystegia pubescens*, *Campanulas* of various kinds, *Catananche cærulea*, *Centranthus ruber*, *Coreopsis lanceolata* and *tenuifolia*, *Corydalis lutea*, different kinds of *Larkspurs*, *Dracopetalum Ruyschianum*, *Dictamnus Fraxinella* and *albus*, *Erigeron speciosus*, *Erodium Manescavi*, *Eryngium amethystinum*, *Funkia Sieboldii*, *Galega officinalis*, *Gentiana asclepiadea*, *Geranium ibericum* and *sanguineum*, *Helianthus rigidus*, numerous species and varieties of the *Flag (Iris)*, *Everlasting Pea*, *Lilies* of various kinds, *Linaria dalmatica*, *Lychnis chalcidonica* and *Viscaria plena*, *Lythrum Salicaria roseum*, *Lavatera unguiculata* and *thuringiaca*, *Lupines* *Malva Alcea* and *moschata*, *Monarda didyma*, *Cenothera fruticosa*, *macrocarpa*, *riparia*, *marginata*, *speciosa*, *Platycodon grandiflorum*, *Phlomis Russelliana*, *Herba-venti*, herbaceous and other *Phloxes*, *Pyrethrum carneum*, *Rudbeckia speciosa*, *Salvia argentea*, *Spiræa Aruncus*, *palmata*, and *venusta*, *Statice latifolia*, and *tatarica*, *Symphandra pendula*, *Symphytum bohemicum*, *Tradescantia virginica* and vars., *Trolliuses*, *Tropæolum polyphyllum*, *Veronicas*, and *Verbascum Chaixii*. Plants for autumn blooming might consist

of *Acis autumnalis*, Hollyhocks, *Aconitum autumnale*, *Anemone japonica* and vars.; *Arundo conspicua*, *Asters*, *Astilbe rivularis*, *Chrysanthemums*, *Eupatorium purpureum*, *Gaura Lindheimeri*, *Merendera Bulbocodium*, *Platycodon autumnale*, *Pyrethrum serotinum*, *Polygonum cuspidatum* and *vaccinifolium*, *Sparaxis pulcherrima*, *Sternbergia lutea*, *Stevia purpurea*, *Tritoma Uvaria*, and others. The following perennial plants have fragrant flowers, viz., *Adenophora liliifolia*, *Allium fragrans* and *odorum*, *Asclepias Cornuti*, *speciosa*, *Douglasi*, *Calamintha glabella*, *Clematis Flammula*, *Crambe cordifolia*, *Crinum capense*, *Daphne Cneorum*, *Pinks*, *Dietamnus Fraxinella*, *Funkia Sieboldii*, several species of *Iris*, *Lavender*, *Leucojum vernum*, different sorts of *Lilies*, *Lupinus polyphyllus*, *Malva moschata*, *Mirabilis Jalapa*, *Muscari moschatum*, *Narcissus major* and *Jouquila*, *Pantracium maritimum*, *Tussilago fragrans*, *Viola odorata*, *Wallflowers*, and, though not a perennial, *Mignonette*. In your narrowest borders such things as *House-leeks*, *Stoncroops*, and *Saxifrages* would do well, and among them might be planted dwarf bulbous plants, such as *Crocuses* and *Squills*.]

FOLIAGE v. FLOWERING PLANTS.

THE recent heavy rains and the almost total absence of sunshine have seriously marred the beauty of all flower gardens in this district; and especially is this the case where dependence has been placed on flowering plants alone for display. In spite of wind and storm, however, the masses of dwarf foliage plants stand out bright and distinct, apparently none the worse, beyond a little exuberance of growth, for the drenchings they have received. In our changeable climate the employment of fine-leaved plants might, I think, be extended with advantage; for where anything like permanent effect is desired, it can be secured more easily by masses of foliage than by depending altogether upon flowering plants. I have never seen such foliage plants as *Colens Verschaffelti*, and its variety *marmorata*, *Iresine Lindeni*, *Golden Feather*, *Abutilon Thompsoni*, &c., do better than they have done this season. Of course, it is easy to make a garden too sombre-looking by using too much dark foliage; but plenty of lighter tints are to be found among *Centaureas*, *Cerastiums*, *Guaphaliums*, *Lamiums*, *Euonymus*, *Santolina incana*, *Stachys lanata*, *Dactylis glomerata variegata*, and the almost endless varieties of variegated *Geraniums*, not forgetting the large family of *Succulents*, and the beautiful *Maple*, *Acer Negundo variegatum*, and several beautiful *Ivies*, *Vincas*, *Yuccas*, &c. There is one description of flowering plants that has passed through this season's watery ordeal unscathed, and that is the *Viola cornuta* and *Imperial Blue*. Amongst *Verbenas*, the old hardy *venosa* is undamaged, and amongst scarlet bedding *Geraniums* *Tom Thumb* in a season like the present is still a "General." Amongst annuals for bedding I may mention *Balsams* as worthy of more frequent planting, both as masses in the centres of large beds, and as single plants in prominent positions. When planted out in good soil they are not like the puny things often seen in pots, but frequently attain a height of three or more feet, and nearly as much in diameter. Where cut flowers are in demand, double *Zinnias*, of various shades of colour, are exceedingly beautiful, and will last a considerable time, and do not drop their petals like many other flowers.

E. HOBDAY.

Whence come the Finest Roses?—I cannot at all agree with the Rev. Mr. Reynolds Hole that "as a rule the roses from the briar are the best." Those shown by that veteran rose-grower Mr. Keynes, at Hereford, this year were all grown on the *Manetti*, and yet they won for him all the first prizes in the leading classes, and that too against such distinguished growers as Mr. George Paul, Mr. Cant, and Mr. Cranston; surely, that says a great deal in favour of the *Manetti*; but there are still many other reasons why I like the *Manetti* as a stock: in the first place, a rose worked on the *Manetti* will give three times as much bloom as it would if worked on a briar; again, a bed of roses on the *Manetti* has surely a much prettier effect than a bed of roses on the briar; and, as a last recommendation and certainly not the least, the *Manetti* will thrive and do well on any soil, whilst the briar unless planted in a very deep rich loam, is of little or no use. With regard to the maiden blooms from the briar, I believe that they are better than the maiden blooms from the *Manetti*, but I think that the second year's bloom from the *Manetti* will beat them all. I hope some other rose-growers will kindly give us the benefit of their experience in this matter.—ROBT. N. G. BAKER, *Heavitree*.

Double Scabious.—A few years ago some very handsome and very double forms of *Scabiosa nana flore-pleno* originated with one of our leading German seedsmen, or at least were distributed by him. As decorative plants for the garden they were great improvements on the tall-growing *Scabiosa atropurpurea*, so well known in our

borders, and wherever their cultivation has been taken in hand they have to a great extent superseded the older type. I saw a collection of seven varieties of *Scabiosa nana* in flower last summer, and made a note of the different colours at the time, because so attractive. The palest was a lilac-coloured flower; then came a pale pink, each floret having a thin edging of white; next an orange-red, very showy; then a bright crimson, then a deep claret-coloured flower, and then a shaded purplish maroon. Such were the ascending shades or hues of colour, from the palest up to the darkest. All the varieties to which I have just alluded had a branching, bush-like habit of growth, each plant bearing many flowers. Apart from their undoubted value as decorative plants in the garden, they well deserve cultivation in places where large quantities of cut flowers are required during the summer months. Each plant supplies a good number of ranuncululike flowers, that last a considerable time after being cut, and are therefore more durable than many other flowers grown for this purpose. They can be planted in the herbaceous border, or on any convenient spot; they do not require any special mode of cultivation, though the more generous the soil in which they are planted, the finer will be their flowers. Collections of seed of these dwarf varieties of the *Scabious*, saved in colours, are easily obtainable.

Moræa iridioides.—This lovely and distinct-looking plant has proved quite hardy at Glasnevin, where it is now in bloom, as it has been throughout the summer. It used to be grown in pots in the houses but, placed out in a peat border in front of them, it has thriven apace, attaining a height of about three feet. The rich yellow flower is iris-like, but with the parts disposed in nearly one plane and with rich black spots towards the centre. It never bloomed when grown in pots. We recommend the plant to every lover of hardy subjects. It is suited for association with the finer *Iris*es and *Lilies*, or for placing here and there in beds of choice American or other shrubs.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Virginia Creeper.—Can any of your correspondents tell me from experience the age to which this creeper is likely to attain?—CALVICERS.

Clerodendron foetidum.—This is a perfectly hardy herbaceous plant in my garden, and is now opening its showy blossoms on my warm border. It thrives best in rich deep soil, well drained.—D. F. R.

Saxifraga ciliata.—I find this the handsomest in foliage of the large-leaved *Saxifrages*. It is, however, rather tender, and requires a warm sheltered position and rich light soil.—F. F., *North Devon*.

Helleborus argutifolius.—This is one of the most effective foliageed plants, and, moreover, quite distinct in aspect from anything we have. It, however, requires a warm and sheltered position to do well.—CLIFTON.

Anomatheca cruenta.—The flowers of this little bulb now swarm and sparkle everywhere in my mixed border (mostly composed of peat and leaf mould), and are much admired by every visitor to my garden.—S. WEXFORD.

Yucca stricta.—This fine and bold habited species is now in vigorous health in the Dublin Botanic Garden, where it has proved quite hardy during a trial of ten years' duration.

Richardia maculata.—This we do not remember to have seen used in the flower gardens about London. It forms the centre of a bed at Glasnevin, and looks very attractive. The habit is bold and novel, the marking of the foliage pleasing, and there it makes a free growth in the open air.

Malva mauritanica.—Permit me to call the attention of lovers of ornamental perennials to the merits of this fine kind. With me it forms a mass of clear rose-coloured flowers four to five feet high, and is a noble ornament of the mixed border in autumn.—J. S. W.

Variegated New Zealand Flax.—This, in good specimens, is perhaps the most striking flower-garden ornament recently introduced. No doubt in the southern and milder districts it will, like the green kind, prove hardy, but it will be even more useful where it must be kept indoors in winter. Housed in the conservatory at that season, it will prove one of its highest ornaments.

Cerithe minor.—This is a singular plant, belonging to the order *Boraginaceae*. Its height is scarcely two feet, its growth is curved and branching, the flower-stems arching over considerably, so much so that the delicate yellow tube-shaped bloom is entirely hidden at the apex of the stem by the long and closely-inbricated pale green leaves with which the stem is furnished. I should like to see it grown in a suspended basket, when one might see its flowers, while its foliage would contrast with that of many other plants.—W. T.

Rudbeckia californica.—I am glad to see that this vigorous herbaceous perennial is beginning to occupy a place in good collections. It is the best, so far as I have seen, of the yellow-flowered species of *Rudbeckia*, its large golden yellow flowers, many of which are about five inches across, being produced in abundance, and it has a conspicuous brownish conical disk two inches or more in length, which adds to their interest. This plant should have a place in all large mixed borders; it would also form a capital subject for planting in shrubberies.—S.

Platycodon (Campanula) grandiflorum.—This fine herbaceous perennial is flowering freely in several establishments this season, and owing to the beauty of its large cup-shaped deep blue flowers, and the freedom with which they are produced, I wonder that it is not more planted than it is, as it generally thrives in sandy loam, and is a conspicuous border plant. I have also noticed the following varieties of it, viz.: single and double white, double blue, and a light blue double and single, all of which are equally worthy of culture. At the Wellington Road nurseries there is a form which seemed quite distinct in habit from the common kind: it has a somewhat trailing habit, whereas the common kind has an erect habit. This latter variety struck me as likely to be a good subject for hanging over rocks, &c., but for the flower border it is not at all equal to the common form.—T. S.

THE ARBORETUM.

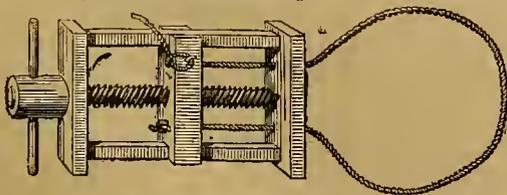
A HANDY MODE OF TRANSPLANTING.

THERE is a very good method for the transplantation of small trees, specimen conifers, evergreens, and like subjects, sometimes employed on the Continent, which deserves to be better known with us. Round each tree a circular trench is opened large enough for a man to move about in it at his ease. The depth should be equal to that of the deepest large roots, and a ball of earth large enough to insure the safe removal of the tree should be left. All the smaller roots found in the trench should be carefully preserved. The ball is shaped into the form of a truncated cone, with its smallest portion below. It is next surrounded with light deal boards, separated from each other by the distance of three-quarters of an inch or so, like the staves of



Small Machine for Lifting Specimen Shrubs and Conifers.

a barrel. They are next secured temporarily by a suitable rope. A man then descends into the hole and fixes the rope by means of the screw apparatus shown in our figure, so as to press the planks firmly against the soil of the ball. The press is then removed and the same thing done higher up, within say four inches of the top, an ordinary cask hoop being first nailed round the planks before the screw is unfixed. The ball being firmly fixed in its proper position, it is hove over so as to get to its underneath part. The bottom of a cask



Screw used in preparing specimens for removal.

having its boards fastened together with a circular piece of sheet iron rather larger than itself is passed under, the iron being pierced with two or three holes and turned up so that it may be nailed against the planks. In some cases the stem of the tree should be fixed by iron wire to the sides of the improvised cask. When it reaches its destination it is gently inclined to one side and the bottom boards

removed. The hoops are next unfastened, the boards removed, and the roots carefully arranged in their natural position.

The apparatus costs a mere trifle, as will be seen from the following estimate. A press made of oak and beech, with the rope included, only costs about eighteen shillings; if it were made of iron it would possibly cost less. For a ball six or seven feet in circumference and eighteen to twenty inches high, the boards, hoops, cask bottom, sheet of iron, and nails would cost less than a couple of shillings. If still greater economy is desirable, what are known as Yankee flour barrels may be used, if they are cut in two and taken to pieces. With these simple appliances two men can prepare five trees a day ready for hoisting on to the cart or other conveyance intended to receive them.

MARKS ON TREES.

MARKS cut on trees are permanent if cut into the wood; if only into the bark they become gradually obliterated. Incisions made in the true woody substance become filled up with the new wood that is formed in annual layers, and are never more seen unless the wood be longitudinally severed so as to expose them again. My grandfather had given to him many years ago a bit of oak with a Roman I, and some other letter with a perpendicular stroke—possibly an R—but partly destroyed by a chop of an axe. It has the following note pasted on the back:—"This piece of wood was found in an oak tree fifteen inches below the bark, and contained the initials of King John, who died at Newark 600 years ago." This may be one of the identical "brands" mentioned in the guide books.—J. T. F., *Hatfield Hall, Durham.*

The following quotation from the late Mr. J. R. Walbran's "Guide to Redcar" is interesting in connection with this subject. The author is speaking of Kirkleatham:—"There is, too [in the museum], a portion of a tree grown in Newbrough Park, near Thirsk, and sent here by Lord Fanconberg, which, on being cut down and split up for billet-wood, was found to bear the following inscription, graven in rude Roman capitals about five or six inches high, on a bole or core of about twelve inches in diameter, which came out entire from an outer rind of about four inches in thickness:—

' This tre lovng time witnes beare
Of tow Lovres that did walk here. ' "

The letters encircle the tree in nine spiral lines, occupying a space of about five feet, and are impressed both on the bole in which they have been "originally committed, and on the rind by which they have been subsequently enveloped. Two hearts, each transfixed with an arrow, after the usual and approved fashion, are introduced in the third line, and in one of them may be traced the letter B. The other is uninscribed."—*Edward Peacock, in "Notes and Queries."*

TAPERING TREES.

ESSENTIAL as are the trees that drop their shoots toward earth to the planter who wishes to realize to the full the beauty of the tree flora of our gardens, they are scarcely so much so as those of which every branchlet points skyward—those of the tapering tree, from the stately Lombardy poplar to the slim Irish juniper. We have round towers as well as fountains of verdant life; the leaf-builders raise spires as well as castles. There is no tree yet discovered more effective in the landscape than the Lombardy poplar towering above our numerous round-headed trees. This is what may be considered the queen of our pointed trees; it is as familiar to all as any tree can be, and abundantly planted. But there are other tapering trees to which we wish now to advert.

One of the trees next in value to the Lombardy poplar is the pyramidal acacia. Everybody knows the common Robinia or acacia—which, if it never answered the expectations which Mr. Cobbett placed in it, is nevertheless a welcome ornament in our pleasure grounds, and is one of the best of all trees for garden or street planting in cities, as it retains its verdure for months after the common lime has become as rusty as an old carpet bag. Every form of this tree has indeed, "the verdure of ten meadows in its gracefully cut leaves." The pointed form of such a tree must be valuable, and this is one that is easily procured, and should be planted everywhere. It grows as compactly and is as distinctly tapering as the Lombardy poplar, and has all the charms of the species as regards verdure. Good specimens may be seen on the borders near the west end of the flower-walk in Kensington Gardens, where, however, they are half hidden among other trees, and no doubt often escape notice from the passer-by. It is almost useless to plant such trees, or any trees, where, from being crowded up with other subjects or badly placed, their peculiar character is half obscured. Not growing so tall as the Lombardy poplar, or not so vigorously, this should be associated chiefly with medium-sized trees and vigorous shrubs. It is also a capital plan when dealing

with a subject of any character like this, instead of putting it in the centre of a group of low trees or as the centre to a company of vigorous shrubs, to boldly place it on the very margin of the mass. For isolation such subjects are peculiarly suitable.

A lovely tapering tree is the cypress (*Cupressus sempervirens*), as all know who have observed it in mild districts where it is much planted. We have noticed it thrive most commonly in districts under the influence of the sea, but the best specimens we have ever seen are at White Knights, near Reading, in the part of that place now belonging to Mr. Waterhouse, the father of the well-known architect. And a fine, old, healthy upright cypress is one of the most charming trees to be seen in this world. The fact that it grows with us into such specimens as those at Reading proves that it is not only those who live round the basin of the Mediterranean, or in sunny Italy, that may enjoy it in their gardens.

Lawson's erect cypress (*C. Lawsoniana erecta viridis*) is likely to form one of the most valuable of all tapering trees. The normal form of Lawson's cypress, found wild in Northern California and Oregon, is naturally one of the most graceful of all trees, attaining a height of a hundred feet in its native wilds, and quite hardy everywhere in these islands. The erect variety is to the normal form what the Florence Court yew is to the common yew. It is very erect and dense in habit, and of a light rich vivid green, not glaucous like the species. There are other erect forms of the same species, but none of them have the peculiar and very desirable green hue of this, although in other respects they are very desirable. From its thorough hardiness, this tree may be used in districts where the upright cypress would perish from cold; in fact it is likely to be everywhere useful. As the species to which it belongs naturally attains a great height, it may be expected to form a stately tree. This should be borne in mind in planting it, as it will doubtless prove effective in many positions in which the medium and smaller sized tapering tree would not be suitable.

The red or Virginian Cedar (*Juniperus virginiana*).—Sometimes in our rich and well-sheltered pleasure grounds the Virginian cedar resembles common spiral or fir-headed trees; but almost everywhere one sees it in the Eastern States it is as decidedly tapering as the upright cypress, as anyone may tell who has travelled by rail from New York to Philadelphia. Along many parts of the line the red cedar is common—a close, tapering, low green tree, with from four to ten feet of the base of the stem quite bare and weather-beaten. On the mountains near Newburgh, on the Hudson river, the wild specimens and groups of this species seeded in the distance upright cypresses planted by man, so effective did they appear in the landscape, and so diverse were they in aspect from any tree common in natural woods. The red cedar grows over a vast area, inhabiting some of the coldest as well as the warmest regions, and is quite hardy in this country. Considering this and its peculiar habit, the tree is a neglected one, and far more worthy of the attention of planters than many of the half-hardy kinds sold at high rates.

The Irish Yew (*Taxus baccata fastigiata*).—This beautiful variety of the common yew is so well known and so frequently planted that it need only be mentioned here. It is very likely that we shall soon have a variety of variegated forms of the same type, as, apart from varieties already announced and sent out, others of a decidedly tapering form have sprung up in several different nurseries.

The pyramidal variety of the common London plane should prove attractive to every planter, and particularly to every city planter, as, where there would not be room for the great arms of the common plane to spread forth, this might find a place. We have, however, not seen specimens of it sufficiently developed to say anything of its character as a tapering tree; but young specimens promise well. There can be no doubt, however, as to its deserving a place in the front rank of our noblest trees.

There is a tapering form of the common oak (*Quercus pedunculata fastigiata*) which deserves attention from the planter, not only from its interest as a very remarkable variety of the British oak, but also from its distinct and picturesque port. The best specimens I have seen were in central France; but doubtless there are many good ones in various parts of England. It is to be regretted, however, that trees of this character so rarely show themselves in our pleasure grounds, as this proves that they are either not planted at all, or so badly placed that they are either unnoticed or hidden. *Q. fastigiata viridis* is another variety of oak with a tapering habit, also well worthy a of place in our collections.

Betula fastigiata must be classed among tapering trees, and judging from small examples of it seen in Messrs. Osborn's nursery, it promises to be very ornamental. It was received quite accidentally along with some other plants from Germany. Amongst the varieties of the common hawthorn may be found a good type of a pyramidal tree in the form of *Cratægus oxyacantha* called *stricta*. This differs but little from the common May in anything but habit, which is erect and tapering, its branches being almost perpendicular. Q.

Varieties of *Cytisus purpureus*.—M. Louis Leroy, of Angers, has lately sent us some flowering branches of three varieties of *Cytisus*, which, notwithstanding their beauty, are seldom met with in gardens, and are little known even to many horticulturalists. They are:—*Cytisus p. elongatus*, which has very long pendent branches and broad, handsome, purplish-violet flowers; leaves small and smooth; it is much more vigorous than the type;—*C. p. albo-purpureus*, allied to the white variety, but having the flowers dashed with violet; the tree is not so vigorous, and has slender branches and smooth small leaves;—*C. p. incarnatus* major, leaves small and downy; flowers large, long stalked, in long branching clusters; standard and petals violet-rose and violet; a handsome plant. These three varieties are multiplied, like the type (*C. purpureus*) by grafting on *C. Laburnum*. We would suggest that they should be grafted not only on tall standards and half standards, as is usually done, but also on dwarf stocks, when they would form excellent subjects for covering rockwork with their long, elegant, and flower-laden branches.—*Illustration Horticole*.

NOTES AND QUESTIONS ON TREES AND SHRUBS.

Quercus glabra.—This noble evergreen oak has this year made shoots one foot long in my garden at Queenstown, where it promises to become one of our handsomest evergreens.—G., *Queenstown*.

Viburnum macrocephalum.—This noble flowering shrub has been in flower against the sunny wall of my greenhouse since April, and is even yet opening a few of its large masses of blossoms.—F. LEWIS.

Cytisus nubigenis.—Let me recommend this to all who desire to add to their collections of flowering shrubs. Its flowers are whitish pink, and it is agreeably distinguished by a fine odour.—M.

Magnolia Campbellii.—This new and very remarkable ornamental tree is, we are informed by Mr. Gumbleton, thriving so well and growing so rapidly in Mr. Crawford's garden at Cork, that it may soon be expected to flower there.

Abutilon vitifolium.—I am surprised this really noble shrub is not better known. With me, its large delicate marve-coloured flowers are now about to open, and it will for many weeks remain one of the most striking objects in a large collection of flowering shrubs. It thrives both as a wall plant and a shrub. My garden is near the sea-shore, but sheltered.—ARBOR.

Desfontainea spinosa.—My bush of this is now the object of much admiration—a holly-like bush, with gloriously brilliant short tubular blossoms. One wishes it would thrive everywhere in the open air, but is it not better worthy of pot-culture than many things we highly esteem for the greenhouse? Will any of your readers say in what positions they find it thrive best—shady or sunny?—H., *Exmouth*.

Curiously-shaped Elder Tree.—In Canonbury Laue, Islington, is an elder of a very unusual form. As nearly as I can estimate, from a glance while passing it in a cab, the stem is about twenty feet high, at which elevation its first branches appear, and then spread horizontally and dependently. The result is a tree with a globular head of some ten feet in diameter, the total height of the tree being about twenty-five feet.—W. T.

MEAN TEMPERATURE OF EVERY DAY IN THE YEAR 1871.

Days of the Month.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1	36.8	39.1	40.6	45.5	51.0	58.4	62.7	63.2	60.0	54.7	45.7	41.3
2	36.7	39.2	40.7	45.7	51.3	58.6	62.8	63.2	59.8	54.5	45.5	41.3
3	36.6	39.2	40.8	45.9	51.5	58.8	62.9	63.2	59.6	54.2	45.4	41.3
4	36.5	39.3	41.0	46.2	51.7	59.2	63.0	63.2	59.5	54.0	45.1	41.3
5	36.4	39.3	41.1	46.5	52.0	59.4	63.1	63.1	59.4	53.7	44.8	41.2
6	36.4	39.3	41.3	46.7	52.2	59.6	63.1	63.1	59.3	53.4	44.5	41.2
7	36.3	39.3	41.5	46.9	52.5	59.7	63.2	63.0	59.1	53.0	44.1	41.1
8	36.3	39.3	41.6	47.1	52.8	59.9	63.2	62.9	59.0	52.6	43.8	41.0
9	36.3	39.2	41.7	47.2	53.0	60.0	63.2	62.9	58.9	52.6	43.6	41.0
10	36.4	39.1	41.8	47.3	53.2	60.1	63.3	62.8	58.7	52.3	43.3	40.9
11	36.4	39.1	42.0	47.5	53.4	60.2	63.3	62.8	58.5	52.1	43.1	40.8
12	36.5	39.1	42.1	47.6	53.6	60.4	63.3	62.7	58.3	51.7	42.8	40.7
13	36.6	39.0	42.2	47.7	53.8	60.5	63.3	62.6	58.1	51.4	42.5	40.7
14	36.6	39.0	42.3	47.9	54.0	60.6	63.3	62.6	58.0	51.3	42.3	40.6
15	36.7	39.0	42.4	48.1	54.3	60.7	63.4	62.4	57.8	51.0	42.2	40.6
16	36.7	39.0	42.6	48.3	54.6	60.9	63.4	62.3	57.6	50.7	42.1	40.5
17	36.8	39.1	42.7	48.4	54.8	61.1	63.4	62.2	57.3	50.5	42.0	40.4
18	36.9	39.1	42.8	48.6	55.1	61.2	63.4	62.0	57.2	50.1	41.9	40.4
19	37.2	39.2	43.0	48.7	55.4	61.4	63.4	61.8	57.1	49.8	41.8	39.8
20	37.4	39.3	43.2	48.8	55.7	61.5	63.4	61.6	56.9	49.6	41.7	39.7
21	37.6	39.4	43.4	49.0	55.9	61.6	63.4	61.5	56.7	49.2	41.6	39.4
22	37.7	39.6	43.6	49.2	56.1	61.7	63.4	61.4	56.6	48.8	41.6	39.0
23	37.9	39.7	43.7	49.3	56.3	61.8	63.4	61.3	56.3	48.4	41.6	38.9
24	38.3	39.8	43.9	49.6	56.4	62.0	63.4	61.2	56.1	48.0	41.5	38.7
25	38.4	40.0	44.1	49.6	56.6	62.1	63.4	61.0	55.9	47.6	41.5	38.4
26	38.6	40.1	44.2	49.7	56.7	62.2	63.4	60.9	55.7	47.3	41.4	38.1
27	38.6	40.2	44.4	49.8	56.9	62.3	63.3	60.8	55.6	47.0	41.4	37.8
28	38.7	40.4	44.6	50.1	57.2	62.4	63.3	60.7	55.4	46.6	41.4	37.6
29	38.8	...	44.7	50.4	57.6	62.5	63.3	60.5	55.2	46.4	41.4	37.5
30	38.9	...	44.9	50.7	57.9	62.6	63.3	60.4	55.0	46.2	41.3	37.3
31	39.0	...	45.3	...	68.1	...	63.3	60.2	...	45.9	...	37.1
Mean	37.2	39.4	42.7	48.1	54.6	60.8	63.3	62.0	57.6	50.5	42.8	39.8

From Mr. Glaisher's *Reduction of the Meteorological Observations*, published as a Supplement to Vol. II of the *Journal of the Royal Horticultural Society of London*, new series.

PROFESSOR OWEN'S GARDEN, SHEEN LODGE,
RICHMOND PARK.

The most attractive gardens are by no means the largest. Indeed, the most beautiful in England are comparatively small ones. Professor Owen's garden is one of the simplest and most unpretending, but withal one of the most charming in the neighbourhood of London. Many a visitor to Richmond Park enjoys the look of his cottage, as it nestles on the margin of the noble sweep of undulating ground near the Sheen Gate, but it is from the other or the garden side that the picture is most beautiful. A lawn, unbroken by geometrical twirlings, stretches from near the windows to the boundary, and it is fringed with numerous hardy trees. Here and there are masses of flowering shrubs, and an odd bed of lilies, while numerous herbaceous plants peep from among the roses and rhododendrons. Quite near the house stands a noble specimen of *Gleditsia triacanthos*, graceful in foliage as any inhabitant of the fernery, yet stately

old specimens of the weeping beech, which displays such an uncontrolled variety of picturesque branching.

There is in the main part of the garden only one walk, and this takes one round the whole place, and does not needlessly intrude itself, as it glides behind the outside of the groups which fringe the sweet little lawn. Instead of this walk coming quite close to the house it is cut off from it by a deep border of rhododendrons, intermingled with lilies and the finer herbaceous plants. These, in consequence, look into the windows. Instead of looking out, as usual, on a bare gravel walk, the eye is arrested by rhododendrons or *Spiræas*, with here and there a lily, a foxglove, or a tall evening primrose, according to the season. Beyond these, at a distance of twelve feet or so, is a broad, convenient walk; the effect of the border from the other side of the garden is quite charming, inasmuch as it makes the already beautiful creeper-covered cottage seem to spring out of a bank of flowers. Therefore, I think that the



Gleditsia, in Professor Owen's Garden.

and picturesque in the highest sense. Of this Professor Owen writes, in reply to a query of mine respecting this tree:—

“It was planted by my predecessor, about 1812; its present height is between seventy and eighty feet; it has lost two large boughs by gales, when in full sail of foliage, with a wet sheet (*i.e.*, with rain accompanying the storm), in the last ten years, and I have had a chain put round the three remaining chief divisions, which tower aloft from the main trunk, by way of precaution. But the best days of the tree have passed. I supply a botanical friend during his lectures at one of our medical schools, with the branched thorns from the trunk, especially when any exhibit the metamorphosis into the ‘leaf.’ The specimen at Kew exhibits the decrepitude of age; that at Fulham, in the bishop's garden, if it still lives, is an older specimen. Few deciduous trees, if any, are more ornamental in their prime.”

And so would our readers say if they saw it in full beauty, its long lower arms stretching far out near the turf, laden with their fern-like leaves, and the whole surface of the tree, for eighty feet upwards, broken up in the boldest and most picturesque manner. In fact we know of no tree, except perhaps

placing of a wide border, richly embellished with evergreens, near the house, is a variation from the ordinary mode of laying out villa and cottage gardens which it would be desirable to adopt occasionally. Another agreeable feature of Professor Owen's garden is the grass walks, which ramble through a thick and shady plantation. Even in our coolest summers there is many a day on which such shady, cool walks, with a carpet of grass, are the most enjoyable retreats one can find. Besides, their margins form a capital situation for naturalising many beautiful hardy plants, which are seen to great advantage in such positions, as, for example, daffodils, hardy ferns, scillas, the forget-me-not tribe, the harebells, and numerous other plants.

W. R.

Prussian Gardens.—In visiting these, nothing strikes an Englishman so much as the want of evergreens; the winter is too severe for anything except a few conifers. It is astonishing, too, the amount of labour that is expended in keeping the turf fresh and green. What would they not give for an English lawn? Many Prussian gardens are thrown open two days a week in summer on payment of sixpence, the money thus obtained being divided among the poor in winter.—*Viator*.

ART *v.* NATURE.

BY NOEL HUMPHREYS.

THE following is a true and verbatim report of a case recently brought before a high court of Taste. Art, through the agency of the topiarist, was at issue with Dame Nature, the defendant in this case. Two leading pleaders, Cutbush and Freegrove, were engaged, at enormous fees, on either side, as a very serious and artistic horticultural question was at issue. The defendant, a certain Dame Nature, had insisted that a certain bear, and a certain hunter, and a certain dog, the work of a certain disciple of Art, by name Topiarius, should be allowed to sprout freely into the form of a wild Yew tree, as she, Dame Nature, the defendant, had originally intended; Topiarius, claiming that such liberty would be an infringement of his vested rights.

The eloquent and rapidly rising counsel, Shearington Cutbush, Q.C.,* opened the case with his usual eloquence and skill, at once taking the bull by the horns, or rather the bear by the paw, which he shook in very friendly fashion, declaring that he would stand by him, and trusted that the gentlemen of the jury, after they had listened to what he had to say, would do the same, and give an unanimous verdict in favour of his client.

He said that a faction had arisen under the *wild* auspices (hear, hear) of Dame Nature, a very respectable, and very influential, and very important personage, against whose general character he had not one word to say (hear, hear). But there was a power, which, in the interests of civilization and progress, he, Cutbush, considered co-equal and co-important with that of Dame Nature—he alluded to that all-accomplished personage, Art, the plaintiff in this case. Dame Nature, he said, was all very well in her way (oh, oh, from the defendant's supporters). He did not wish for a moment to depreciate the character of defendant (hear, hear); she was a highly necessary adjunct (oh); but when she assumed the power of dictating tyrannically to his client (hear, hear, from the plaintiff)—when she insisted that provinces which had been legitimately conquered by the refinements and accomplishments of the plaintiff, Art, should relapse into the wild domain of Dame Nature (hear, hear)—then he took his stand on the grounds of justice and progress, and insisted that the high court of Taste and Art should interfere, in order to protect that same cause of progress and civilization (hear, hear, from plaintiff's supporters) from a wild overgrowth (hear, hear, from the same part of the court) of Nature's many-branching legions, who are ever on the watch to disfigure the endeavours of his client, Art, to evolve beauty and symmetry and regularity (hear, hear) from formlessness (hear) and irregularity. He would make bold to say that, where Nature had produced only a wilderness, his client, Art, had stepped in and made—(cries of "a bear garden, a bear garden")—he must call upon the court for protection—that, at least, need not become a bear garden—(hear, hear, from plaintiff's party, and silence, silence! from the clerk of the court). Bowing to the Judge, Mr. Councillor Cutbush proceeded. "In a place," he said, "where adverse opinions were professed by a small but noisy faction, it might be better for him to confine himself to generalities and avoid details, with which view he would appeal to the honest convictions of anyone present, whether, if a human being, wandering in the tangled fastnesses of a wild forest, came suddenly upon a part which was cropped trimly into shape, and where the rank grass was mown down to a velvet surface, the wanderer would not build his dwelling there, in preference to erecting it in the depths of the uncultured wild? (hear, hear). He thanked his friends for that cheer, they acknowledged thereby the truth of a great principle—the fanatical advocates for mere nature were not aware of the depth of the wild chasm into which they were plunging. They might as well prefer the rude mass of the Pentelic rock to the masterpieces wrought from it by the gifted hands of Phidias—of Scopas—of Lysippus (hear, hear). They might as well prefer the rough lump of ochre, or of chalk, to the works which a Raphael or a Rubens had produced by their means (hear, hear). In short, they might as well prefer the wild incongruities of chaos to the exquisite orderings and the

regular and beautiful results produced by the inspired supervision of artistic genius. And he therefore called upon the jury to give him a verdict in favour of the preservation of those interesting works of art which it was sought by the defendant and her supporters ruthlessly to destroy." The learned counsel sat down in the midst of reiterated cheers; and cries of "Long live the disciple of art! long live Topiarius!" resounded through the court, till silenced by command of the impartial judge.

When the turmoil and uproar caused by the eloquent pleading for the plaintiff had partially subsided, Brother Freegrove stood up, in no way daunted by the eloquent and ingenious oration to which he had listened with as much admiration as the supporters of his opponent had done. He smiled at the judge—to gain time—and hitched up his black silk gown, to gain a little more. He then rustled his brief into shape for perusal, and, silence being at length re-established, he commenced his defence as follows:—

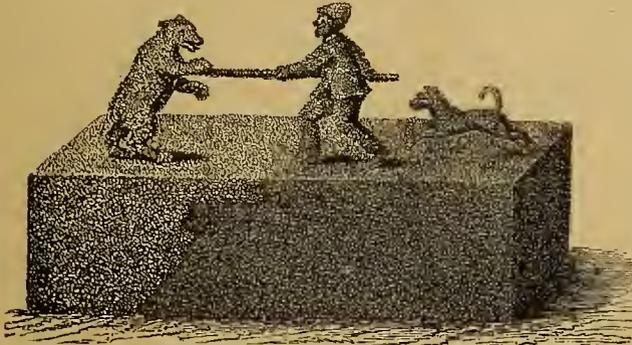
"My lord, and gentlemen of the jury,—I believe I shall be able to prove to you that, however eloquent my learned Brother Cutbush may have proved himself on the present occasion, he has not been strictly logical, either in his premises or in his deductions (oh! oh! from plaintiff's supporters). He would, however, endeavour to follow him in the flood of eloquence which he had poured out before them. His learned friend had admitted that the defendant in this case was a very important personage. He thanked Brother Cutbush for that frank admission, and he would add that, in his opinion, and he hoped to have the court and the jury with him, the defendant was a personage that must not be trifled with (oh! oh!), especially in the manner in which the pretended disciple of Art, Topiarius, who was the real plaintiff in this case, had trifled with her. Art, he would observe, who was, as stated by his opponent, a most respectable and accomplished individual, was merely the ostensible plaintiff, placed in that position for reasons which must be obvious to all present. Art had many (so called) disciples, whose vocation was, however, mechanical rather than artistic. That of Topiarius, for instance, who did for the vegetable domains what his co-disciple Tonsor did for the animal world. Tonsor cut off the beards of men and made them look as much like women as it was possible to make the ruder beauty of men approach the more exquisite perfection which that quality attains to in women." (Great rustling of silks and satins in that part of the court in which the ladies were accommodated with seats.)

Brother Freegrove paused—he saw that he had created a favourable impression in the quarter towards which his last shaft had been directed. He hitched his gown higher on the shoulder, and continued—"Tonsor—the indefatigable Tonsor—armed with his ever-active razor, would have gone into the 'wild and tangled' forest, as his brother had termed it, and have shaved off the *wild* tawny mane of the forest lord, if he had ever mustered the pluck to come up to the scratch—which he luckily had not" (laughter and cries of shame, order, silence). After a brief contending uproar of applause and disapproval, Brother Freegrove proceeded. "Now Topiarius had ventured, he must admit, farther than Tonsor—his brother shaver—for he had actually cropped and sheared, if not a lion, at all events a bear—the very bear in question—which was, however, a bear which it was very safe to crop (shame, hear, go on), for as all knew full well, it was not a natural bear, though yet a living bear (hear, order). When he said it was an unnatural bear, he did not mean to say that it was a blue bear, such as they had often seen swinging over the door of an ancient hostelry, nor yet a red bear, nor a golden bear; but none could deny that it was a *green bear*" (hear, hear! order), and therefore a sham bear.

"Its creation was altogether an unnatural act on the part of Topiarius—a cruel act—he had hunted him up with his shears till he had fairly 'tree'd him' (laughter), which in bear hunting was considered equivalent to destroying him—the tree'd bear was, proverbially, 'a gone coon' (order, order)—well, he would say no more upon that point, if it was so painful to the feelings of Topiarius, the real plaintiff in this case, but rather confine his remarks to Topiarius himself, who had not only falsified the bear tribe, but had 'played the very bear' with the noble yew by the action of his cruel shears (order,

* Q.C., in the department of the ancient court in which Cutbush practises is said by antiquarians to be the initials of Queer Cutter.

order). He would, therefore, call upon the jury to return a verdict for Dame Nature, the defendant, and also for the maltreated yew tree, which had been tortured from its natural form, like the Chinawoman's foot strapped into the unyielding wooden slipper (hear, hear! no, no! yes, yes! order, order). In conclusion he must beg leave to notice his learned friend's illogical use of Pentelic marble and the chisels of Phidias and Co. There was not the slightest analogy between them and the topiarian disfigurer of the yew tree. The Pentelic rock lay inert and incapable of any further development of its own, and so did the chalk and ochre, all three of which were legitimate materials for the creative genius of man to work upon; but the yew tree had a development of its own to perfect. Its dark majesty in its own grand and peculiar forms of development was one of the glories and wonders of



Example of Yew-clipping. (After P. Launberg, 1654.)

the woods. To curtail the welcome shade which its great far-reaching arms were destined to afford was at once a horticultural crime and an æsthetic blunder, which should be justly punished by the high court of Taste and Horticulture."

Brother Freegrove sat down amidst a storm such as has seldom been heard in a Court of Taste; but the verdict was for Dame Nature, and for the restoration of its invaded liberty to the noble yew, which had been so cruelly "cribbed, cabined, and confined" by Topiarins, under the false pretence of his being a true disciple of Art, in whose august name the action was ostensibly brought.

THE GARDEN IN THE HOUSE.

CULTURE OF PLANTS IN ROOMS.

(Continued from p. 124.)

PREPARATION OF THE SEED FOR SOWING.

UNDER this heading we intend to speak of those means which are employed to excite vitality in the seeds before sowing them, and by which a speedy germination is secured after they are sown, and also to preserve vitality in seeds until they are sown. They may be put in practice either immediately before sowing the seeds, or they may be continued until the natural time of germination. Simple means are, according to our experience, the best in this matter, and the more so the nearer they approach the course of nature. These means are soaking and layering.

SOAKING AND LAYERING.

In soaking, the seeds are steeped for twenty-four hours in lukewarm soft water which does not contain any mineral substance in solution, and then sown. If this operation, when practised with fast-germinating seeds, causes them to sprout, they should, after the lapse of twenty-four hours, be subjected to the free influence of the air. If the quantity of seeds is small, the water should be poured off at the end of the twenty-four hours, and the seeds should be allowed to stand in cups or saucers in a warm room, with only just so much lukewarm water in the bottoms of the vessels as will maintain an equable condition of moisture without covering any of the seeds completely. The cup should also be covered with paper, so as to keep up a moist atmosphere in the inside. Fresh water should be poured in from time to time, when necessary, so as to keep

the bottom of the vessel moist. When the seeds begin to germinate, they should be sown. We have found it much better, instead of steeping the seeds in water, to place them between two layers of sand in shallow pans with drainage holes in the bottom. These are then placed in a warm room, both sand and seeds being thoroughly moistened with lukewarm water, and kept so until the seeds germinate. The pans should be as much as possible exposed to the light, only small pans should be used, and the seed should be placed in a very thin layer. The sand employed should be clean and loose, and when large quantities of seeds are treated in this way, they should be turned over and examined once every day or two to see whether they have begun to germinate or not. This method has the advantage of securing an equable condition of moisture, heat, and air, and of avoiding an excess of water, such as may occur in soaking. The results are consequently more certain, although they may be somewhat slower. A third method resembles that employed in the making of malt. The seeds are laid in heaps on dishes in a warm room and sprinkled daily with lukewarm water, are frequently turned, and covered with a light cloth. In this way large quantities may, with a great saving of trouble, be operated on, especially of such seeds as clover, red beet, &c. But it is more suited for agricultural purposes than for room culture. It is to be remembered that in all these methods the temperature must not be neglected. Seeds of tropical plants should not only be placed in the warmest part of the room, but the pot or pan containing the seeds should also be plunged in another larger one filled with moist sand, and placed on a stove heated to 120° Fahr. Seeds of plants of temperate regions and annuals if placed in the window of a heated room will enjoy the temperature that just suits them. Seeds of trees and perennials which grow in the open air may be sown in a room where the temperature is above freezing-point. A fourth method is that of soaking in hot water. The seeds are placed in a dish and water almost at the boiling point is poured on them. They are then placed in a warm room to cool. The effects of this mode are twofold. In the first place the hot water is in a lighter and more expanded condition, and therefore penetrates sooner and more completely into the interior of the seed, and in the next place it acts as a stimulant, especially in the case of seeds with hard skins or shells, such as those of New Holland Acacias, the Erythrinæ, Canna, Palms, Leguminosa, &c. It is with seeds of this kind that it should be chiefly employed. The seed of the New Zealand spinach (*Tetragonia expansa*), which is very tedious in germinating, should also be treated in this manner. But in the employment of this method care should be used, as the vitality of thin-skinned seeds would be completely destroyed by it. Moreover, too much hot water should not be poured on the seeds, so that they may cool the sooner, or if a large quantity is poured on them, so much of it should be poured off after a few minutes that only half of the seeds may remain covered with water. As soon as the water cools the seeds may be sown or layered until they germinate.

Instead of soaking hard-shelled seeds, they are sometimes cut or filed. But in this operation care should be taken not to injure the germ by cutting or filing quite through the shell. After being cut or filed, the seed is placed in lukewarm water, or layered, or else sown at once. Care should be taken not to make the cutting directly over the natural opening which overlies the germ in every seed. In seeds, especially those which are rather old, the germ lies in a hollow of the albuminous matter (as, for instance, in many Palm-seeds), and when they are cut or filed over this, the germ swells before moisture can reach the rest of the hard albuminous matter. The consequence is, that the young plant detaches itself from the albuminous matter, and is forced out of the seed. But as the albuminous matter contains the nutriment for the young plant in the earlier stages of its growth, when the germ is detached from it, it must perish. The writer has frequently experienced this, especially in the case of *Oreodoxa regia*, one of the Palms of tropical America.

CHEMICAL AIDS TO GERMINATION.

With old seeds, which have arrived at a condition in which it is difficult to excite their germinating powers, and with

others which are very tedious in sprouting, various chemical mixtures have been employed as stimulants. Water mixed with from the 1-400th to the 1-800th part of muriatic acid, sulphuric acid, oxalic acid, and phosphoric acid, has been found very efficacious, and unquestionably these acids, when employed in the above proportions, do promote the speedier entrance of moisture into the interior of the seed, and so produce a more rapid germination. But they, undoubtedly, do not possess the power which has been attributed to them of exciting fresh vitality in seeds which are already dead. The only advantage which the use of these acids possesses over that of soft river water is, that they bring about the germination of the seeds in a shorter time. The experience of the writer leads him to prefer the use of soft river water, as the results, although more tedious, are better and more in accordance with the operations of nature. Layering in sand we recommend as the best of all the methods even for old seeds. In special cases, hot water or cutting and filing may be employed, but experience is required to know when these should be used. Old seeds are mostly either quite dead, and so past recovery, or they are only very much dried up but still alive, as frequently occurs when they are brought from great distances, or when they are kept in dry warm rooms. In this case the germ of the seed is in much the same condition as a fully developed plant which is nearly dead from over dryness. If the latter is plentifully watered while in such a condition it is almost sure to die, while if it is gently and gradually watered, it stands a fair chance of recovery. In the same way the rapid entrance of water into dry seeds has a similarly injurious effect, and in their case the treatment with hot water, acids, cutting and filing, &c., should be avoided, and the more natural mode of layering in sand, by which moisture is gradually but effectually imparted, should be preferred. In fine, the only case in which hot water, acids, and cutting or filing should be employed is that of fresh, sound, hard-shelled seeds. Among the acids, oxalic acid is said to have a very powerful effect on old seeds. This is recommended not to be diluted, but the seeds are to be placed in the pure acid and allowed to remain there until they germinate. The miracles, however, which have been thus wrought on old seeds have, unfortunately, not been confirmed. In the seeds of conifers it frequently happens that they are covered with resin, which exudes from the skin and scales, and hinders the water from penetrating into the interior. These should be soaked in water to which some spirit of sal-ammoniac has been added, which will dissolve the resinous matter. We have before observed that there are many seeds of plants from cold regions which germinate with much greater certainty, when, after the water is poured off, they are exposed to a temperature below the freezing point. Such seeds, which have completed their ripening after being gathered in autumn, and have been kept dry through the winter, we recommend to be sown in snow. The same may be done with seeds of many of our finest rock-plants, as Gentians, Aretias, and other plants from the higher Alps. Snow should be gathered in a basin or saucer, and the seed sprinkled on the surface. The vessel is then either placed for some days in the open air, if the weather is frosty, or else put in some cool place where the snow will continue for some days in an unmelted state. After the lapse of from three to eight days, the snow may be allowed to melt under a temperature of 36° Fahr. The seeds are left to stand in the snow-water for twenty-four hours, and then sown. The seeds of many forest trees and perennials only germinate when, after falling in autumn, they drop into moist soil in which they pass the winter under a low temperature. These seeds should be similarly treated in cultivation, as all the previously-named modes of exciting germination are of no avail with them. The simplest plan is to sow them in pots in autumn as soon as they are ripe. The pots should then be exposed to the cold on a window-sill or balcony in the open air, and in winter placed in a cellar in a moist place, where the mice cannot get at them. If the cellar is dry, they should be kept moderately watered. In April they should be placed in a cool room on the window-sill and again watered. Germination will soon follow. Should they show any signs of germinating while in the cellar they should be removed into a well-lighted room, where the temperature is above the freezing-point. This

plan is recommended for the Liliaceæ and Umbelliferous plants among the perennials, and for the Pomaceæ, Amygdalaceæ, Rosaceæ, and Aceraceæ among the trees. As the amateur himself gathers but few of the seeds which he sows, but procures most of them in the course of the winter from the seed-shops, when it is too late for an autumn sowing, he should, immediately on receiving the seeds, layer them in moist sand, which is the best way to expedite their germination in the following spring. The vessel containing the layered seeds should be placed in a cellar, having been previously exposed to a temperature of from 28° to 20° Fahr. It should be in a position where the seeds will be safe from mice, and they should be turned once every three or four weeks, and in April should receive somewhat more water. As soon as some of the seeds are perceived to be germinating, the vessel should be removed from the cellar and the seeds should be sown. Seeds of crataegus, pears, apples, cherries, plums, &c., are best sown in nursery beds. For room culture we recommend this treatment in the case of lilies, and the amateur may also employ it in the case of single specimens of ornamental trees or shrubs which he may wish to raise.—*Dr. Regel.*

(To be continued.)

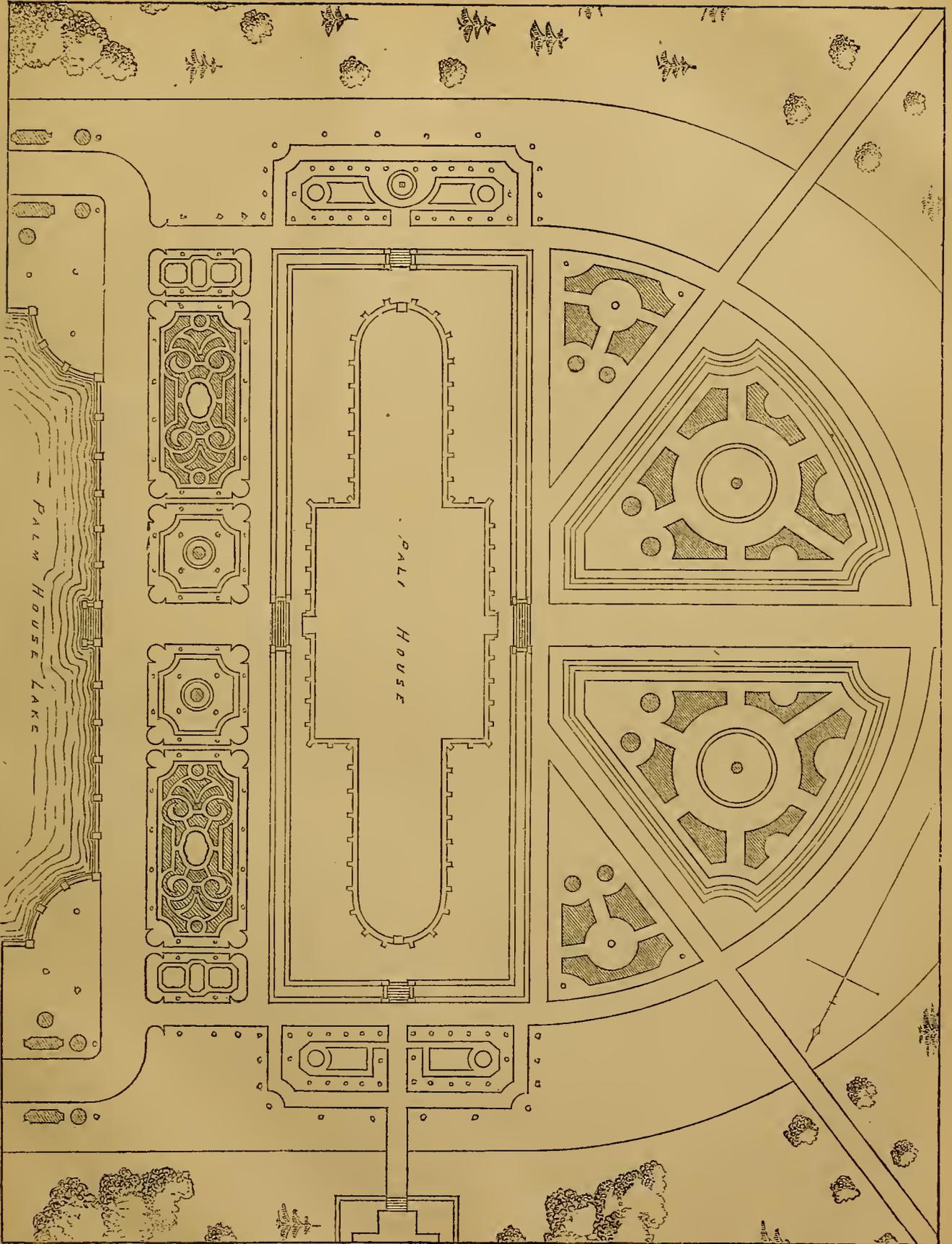
FLOWER GARDENS ROUND LONDON.

KEW.

For many years Kew has ranked among the most celebrated gardens about London for its summer decoration, though "bedding out" is not perhaps a very desirable feature of a botanic garden. The directors of the establishment have, however, been wise in ruling that this charm should not be lost to the thousands who visit Kew. We think that it is a most pernicious and foolish notion which supposes that a botanic garden should not be ornamental in the highest sense. This idea has, unfortunately, been so actively propagated in botanic gardens themselves, that now it is quite common to hear people speak as if the botanic garden proper were legitimately a sort of mummy chamber of the vegetable kingdom. It is "a mere botanical garden," you hear people say of one of our provincial public gardens, as if that statement were sufficient to prevent people expecting any high attraction in a gardening way. But this is an unnatural and unsatisfactory state of things, resulting mainly from the system of planting the subjects in their "orders" over the main surface of the garden. There is no possibility of a perfectly good arrangement so long as this is persevered in. At Kew, however, this particular fault is not at all apparent. The great service our botanic gardens, as distinguished from ordinary flower gardens, can render us, is to show the beauties of little-known plants. A grand field is open for them in this way. The great bar to progress in the way of variety in the private garden is a want of knowledge of good and varied plants, and the want of the plants themselves. But the botanical gardener both knows and has the plants, and, therefore, it is he who should lead the advance, not only in merely collecting plants of the most ornamental character, but also in showing the public how they may be arranged in the most tasteful way. In this way we think Kew might take a decided step in advance by, in addition to the mere bedders, taking up such comparatively neglected subjects as the Yuccas, Lilies, Irises, or grasses, and showing us what they are capable of effecting in the flower garden. So much for what might be; let us turn to what is.

It will be seen by our illustration that between the Palm House and the lake there is a little flower garden. This is usually very dressy, and, when seen from the Palm House terrace in the height of its beauty, it has a pleasing effect. The bedding plants employed here this season look very well, for, the ground being naturally light, this summer's moisture has caused them to start away and grow vigorously. The divisions to the right and left of the central squares are planted alike, or nearly so. In the central bed of each division is placed a vase filled with Geraniums, a few Lobelias and Tropæolums. From the base of these vases the beds are divided into four angular sections, by means of single lines of Centaurea, and each two opposite ones are filled alike, the whole bed being edged with blue Lobelia. The smaller beds contain no

FLOWER GARDENS ROUND THE PALM HOUSE AT KEW.



new feature, either in style of planting or in the plants used. The prevailing brilliance of scarlet too often found in gardens is, however, considerably relieved here by shades of pink and white Geraniums, the dwarf Ageratum, Lobelias, Verbenas, and some other plants more remarkable for foliage than flowers. Amongst the latter are *Centaurea ragusina* and *Coleus Verschaffeltii*, two plants which, when used in broad bands or masses, produce about the finest contrast that can be obtained in flower beds. Several other dark-leaved *Coleuses* are used, but none equal in effect to that just referred to. Another fine dark-leaved plant to be found in these beds is the *Iresine Lindeni*, which is in as good condition here as we ever saw it. It is used as an edging, and becoming too tall for that purpose is pegged down, thus forming a dense dwarf ribbon of a dark copper colour. Golden *Feverfew*, so useful for many purposes, is not used so lavishly here as we sometimes find it. Amongst flowering plants, Purple *Verbenas* seem to thrive admirably this season; owing to the dryness of the soil at Kew in warm weather, these do not give great satisfaction; they continue flowering most profusely for a while after being planted, but towards August their beauty is over. This year, however, they are making good growth, throwing up great numbers of flower spikes, clearly showing that a moist season suits them best.

In front of this little flower garden, along the side of the lake, are numbers of vases filled with *Geraniums*, *Lobelias*, *Nasturtiums*, and similar plants, put in early in the season in tin vessels corresponding with the size of the basin of the vases. When planting-out time arrives, after being properly hardened off, these plants, tins and all, are set in the vases, which at once become well furnished, and the plants employed receive no check.

Between the Palm House and Aquarium are some flower beds. In the centre of some very small ones standard *Roses* have been placed, and around their bases *Geraniums*, one kind only occupying each bed. Last year the larger beds were filled with *Cannas*, *Solanums*, &c., but this season the carpet system of bedding is adopted, the subjects used being *Golden Feverfew*, several kinds of *Alternantheras*, *Lobelias*, &c. With these an attempt has been made to represent a crown, or something of that kind, but it has resulted in a ridiculous failure.

The beds at the other end of the Palm House are mostly filled, but not very artistically, with succulents.

Let us now advert to the semi-circular part at the back of the Palm House. Here all the beds indicated in our illustration are filled with dwarf shrubs, excepting the central circles. In outside corners *Phloxes*, *Pentstemons*, *Gladioli*, and similar plants, infuse into these somewhat sombre-looking clumps a little floral beauty. On both sides of the walk that surrounds this half-circle, are long rectangular-shaped flower-beds, which are not seen on our plan, but which are filled as it were with "make-shift" plants. Some contain dwarf *Dahlias*, edged with *Golden Japanese Honeysuckle*; others *Hollyhocks*, edged with *Phalaris arundinacea variegata*; tall *Phloxes*, *Delphiniums*, &c., compose the bulk of the other beds, which are edged with different forms of *Viola*, and a few other dwarf plants. There are also a few sub-tropical plants in some, such as *Wigandias*, various sorts of *Solanum*, *Castor-oil* plants, *Cannas*, &c. Along the side of the Sion vista are a few beds filled with *Roses*, intermixed with dwarf *Dahlias* and *Mignonette*. Two rectangular beds on each side of the walk beside the steps coming down from the Palm House are edged with strong plants of *Centaurea*, the middle being dark red *Clove Carnations*. The *Centaurea* has grown with surprising vigour, so much so indeed that the *Carnations* are, as it were, encircled by a high wall. For such a position, surely, two better matched plants might have been found. The central circles consist of a raised grass terrace, on each of which is set a vase filled with flowering plants. A few curvilinear beds, a little way out from the vase, are edged at back and front with silvery-leaved plants, the main body of the beds being in mixed panel style, the panels consisting of little clumps of *Coleuses* and *Iresine*. The ground colour is scarlet and pink *Geraniums* and yellow *Calceolarias*, each running into the other, in no very definite pattern.

The plan of this flower garden, specially engraved for us, does not show a few of the recent modifications on the Sion side of the Palm house, but these are of no importance. As to the

beds themselves, we have no hesitation in describing them as bad, and this for several reasons. But the main fault is their overcrowding. There is not only no breadth and no peace, but the object of the designers would seem to be deliberately to destroy these. Many of our readers, will, however, be glad to possess a plan of the flower garden at Kew.

THE FRUIT GARDEN.

FRUIT KEEPING.

A cool temperature of 40° to 45°, with as little variation as possible, is the chief point. All sudden changes must be fought against; they induce decomposition. If the temperature of a fruit room falls under 40°, that of the fruit will be considerably less, and much of the water left in the air will be condensed on the fruit. Especially is this the case during changes from frosts to thaws. All such alternate dryings and dewings of the fruit tend to hasten its decomposition, and must be guarded against as much as possible. The only sure antidote is a regular temperature of about 45°. Various suggestions have been offered for insuring this regularity of temperature. Fruit is often stored in dry cellars, which are well adapted for the purpose; though the temperature in these will average 50°, still, being so regular and subject to no surface change, fruit often keeps well in such places. Others prefer lofts almost wholly isolated from the ground; but these, unless the roofs are protected with double ceilings and thatched coverings, are apt to be too warm in summer and too cold in winter. Perhaps the best place of all would be the middle rooms in large buildings—cut off alike from the earth and the air, the windows fitted with double cold-proof shutters, and the walls built hollow to keep out both heat and cold. But as such mild quarters are seldom available for fruit storing, one of the commonest arrangements is to build a double-walled building in a dry cool position facing the north, and to protect the roof with thatch, double ceilings, &c., so as to render it wholly frost-proof, without the aid of fire heat. The latter is most mischievous in fruit rooms, and should never be introduced, unless in the coldest climates. Another plan of making double walls frost-proof is to fill the space between them with dry chaff or sawdust. If these materials are used in a dry state, and they are kept dry afterwards, it is astonishing how much frost four or six inches of such slow conductors will defy. Others prefer an empty cavity between the walls, as confined air is one of the slowest conductors of either heat or cold. Another means of making the walls of fruit rooms heat or cold proof is to thatch the ordinary walls with a thick layer of dry straw, and cover this again with boarding. Such double or treble walls are better—that is, less penetrable—than those of solid brick. All these modes of preventing cold or heat from passing through walls are equally applicable to the roof. Our care will be thrown away if, while the walls are so carefully protected, the sun is allowed to pour his heat, or the frost its cold, in through the roof. Only of secondary importance to this evenness of temperature is freedom from damp. This is one great advantage of forming fruit rooms on the second or third floors of buildings. But it is also possible to get away from damp on the ground. By choosing a dry site, by thorough drainage and impervious concretes, such as a flooring of asphalt, or compounds of tar and cements, the damp may be shut out as well as the cold. These objects gained, all else is simple and easy. Proceed to shut out the light also by the use of thick wooden shutters. Light, like heat, stimulates fruit, hastens maturity, and consequently is favourable to decomposition. Experience proves that fruits keep best and longest in the dark. I would further add, the less ventilation the better. A still pure air is the chief thing needed, and unless our senses reveal its impurity, it may remain for weeks or months unchanged. If it be needful to ventilate fruit stores, the time should be chosen when the external and internal temperatures are nearly alike, and the weather is clear and dry. As to the mechanical arrangements of fruit rooms, as long as they are clean, convenient, ample, and sweet, little more is needed. Cleanliness is essential. Everything without and within should be without spot. Dirt is the fruitful matrix of decomposition. Convenience is a primary consideration in places that are visited daily. I have seen fruit huddled into almost inaccessible shelves, and placed well-nigh beyond reach. The shelves are often too wide, and packed too closely together. In a room, say ten feet wide, there is no better arrangement than a path of four feet wide down the centre, and the sides arranged in shelves three feet wide and twenty-eight inches or two feet from one to another. The most distant fruits are thus placed within easy reach, and selection or examination presents no difficulty. Another point is amplitude of space. All the best fruit should be displayed singly. To

heap one, two, or three layers on to each other is deterioration or ruin to superior fruit. Common kitchen fruits destined for immediate consumption have often to be heaped together in seasons of plenty, but no superior apples or pears expected to keep should ever be so treated. The old mode of sweating fruit to improve its quality was a practice in direct league with rottenness, and is now generally abandoned. Even the packing of fruits into jars, in drawers, in paper, or other non-conductors is not to be commended. In suitable storehouses, display the fruit in single layers, without squeezing or overcrowding, and it will keep its full time in the best possible condition. Finally, the fruit must lie on a flavourless bed; straw, hay, moss, paper, wadding even, are better dispensed with. There is no bed equal on the whole to clean, smooth-planed, white deal, unpainted. Poplar also forms a flavourless bed, but after a few years' use its softness invites the attacks of fungi. White, and as far as possible knotless, resinless deal, forms the best fruit shelves. Perhaps the best form is in scantlings two inches wide, with one inch space between them. The fruits then rest on the deal, and are well-nigh enveloped with the air of the room. Glazed earthenware and glass likewise make good fruit shelves. Having thus stored our fruits in a place of safety, all that is needed is a weekly examination. As soon as a speck of rottenness appears, out with that fruit; and if by any oversight a fruit should go on rotting unseen, lift it out with the utmost care, for fear of sowing the spores broadcast over others. Beyond this care let the fruit alone. The less it is handled or moved the better it will keep. D. T.

OUR FRUIT CROPS.

ADDITIONAL REPORTS.

Sion House, Brentford, Middlesex.—In this neighbourhood outdoor fruit crops are very unsatisfactory. Of Peaches and Nectarines we have scarcely any. Apricots, none. Apples, very few. Pears, moderate; some trees having a fair crop, others none. Plums, almost a failure. Cherries, a medium crop. Strawberries, Raspberries, and black Currants, plentiful. Red Currants and Gooseberries, very thin.—J. WOODBRIDGE.

Chirk Castle, Cheshire.—The failure of the fruit crop is general throughout this neighbourhood, owing to the severe frost we had in the end of May. Of Apples, we have none. Pears, a fair crop on walls only. Plums and Apricots, a failure. Peaches, Nectarines, and Strawberries, fair crops. Raspberries, a failure. Cherries, a fair crop on walls only. Currants, a failure. Gooseberries, a fair crop. Filberts, a failure.—W. ROSE.

Wiley, Broseley, Shropshire.—With me Apricots are very thin, but good in quality; Peaches, moderate; Nectarines, good in some places; Apples, very good in some places, none in others, but with me early ones are very good; Pears, abundance generally; Plums scarce; Cherries good; Filberts and nuts very scarce; Damsons are good in sheltered situations, none in others. In this immediate neighbourhood, where local report says the Prune Damson originated (Brittian's Lane), they are plentiful. All bush fruits, Gooseberries, Currants, Raspberries, and Strawberries, were plentiful with me, but scarce and much blighted in the neighbourhood.—Wm. WELCH.

Belvoir Castle, Leicestershire.—Stimulated to action at an early period of the year by weather of unusual mildness, fruit trees were more than usually susceptible to the ungenial influences of cold, gloomy, and frosty weather which occurred at the critical period of blooming. Root action paralysed and the flow of sap arrested are consequences that result from ground chilled and soddened by wet. The healthy progress of fruit trees was checked by influences that affected both the root and blossom, and the unhappy results have been not only a failure in fruit crops, but a wretchedly unhealthy and blighted condition of the trees during the spring and early summer. The Apple Crop is the worst I have known for several years, and a portion of the Apples scantily found on the more sheltered and best situated trees is more or less deformed. Pear trees, trained to walls and growing in well-drained well-tilled borders have produced good crops. I gathered Jolimont on an unsheltered wall on the 18th July; Jargonelle is hearing well, Marie Louise abundantly, and we have full crops of Bon Chrétien, Crassane, Winter Nolis, Orpheline d'Enghein, Bergamotte Esperen, and others. Standard trees have generally failed. The Apricot crop has failed completely. Plums, with the exception of a few Victoria trees on walls, bearing partial crops, have failed. Morello Cherries have borne well on north walls, but were much affected by black aphid. Currants, Gooseberries, and Raspberries, scarcely half crops. Strawberries very abundant and fine, but destroyed by heavy and incessant rains in July. Walnuts and Filberts have failed.—W. INGRAM.

Shardeloes Gardens, Amersham, Bucks.—The outdoor fruit crop in this neighbourhood is a failure generally. Apples, scarcely any. Pears, half a crop. Plums and Apricots, none. Peaches and Nectarines, very few. Currants and Gooseberries, one-third of a crop. Strawberries and Raspberries, good. Figs and Nuts, a few. Walnuts, none. Morello Cherries, half a crop; other sorts, a third of a crop. Damsons, half a crop.—THOMAS BAILEY.

Wortley, Yorkshire.—With the exception of Strawberries, Raspberries, and Cherries, which have been an abundant crop, and other small fruits which have been moderately good, this has been the worst year for outdoor fruits here I have ever known. Apples, Pears, Plums, and Apricots are a failure. Heavy falls of snow about the middle of May, and frosts and unkindly weather for some time afterwards, destroyed our prospects of a crop, which up to that date was most promising, especially Apples. Aphides and other insects have been more destructive than usual, particularly after cold weather set in in May. Owing to the sultry weather in June and July, the growth of trees and shrubs has been much more luxuriant than usual. The rainfall up to this date, August 6th, is 36 inches, or about 3,636 tons of water to the acre, and most of that has fallen lately.—J. SIMPSON.

Wolverston Park, Ipswich, Suffolk.—I never saw greater promise of an abundant crop of outdoor fruits than the trees presented this year. Cherries, Pears, and Apples were literally loaded with bloom. The latter was nearly all cut off by the late spring frosts and the trees much crippled, and they have since been badly infested with caterpillars. Cherries appeared to set well, but the fruit was frost-bitten and became deformed, and a large portion of the crop fell. Peaches are a very thin crop; the young leaves became sadly blistered, owing to the sudden transition from cold frosty nights to bright sunny days. The blistered foliage was picked off, and advantage taken of warm afternoons to give a gentle syringing, and the trees have made fair wood and are tolerably healthy. Pears set wonderfully well, so much so, that in many cases we have had to remove quite half the crop; but many are deformed and spotted. Plums are a fair crop on west walls, but thin on other aspects. Apricots are almost a failure, but the trees look well, and appear to have suffered less than Peaches and Nectarines, and are tolerably free from gum. Early varieties of Strawberries, such as Keens', were a full crop; Queens were thin, deformed, and small. Raspberries have been a heavy crop, but those early in bloom were small and deformed. Currants were thin, owing to the attacks of aphides on the bushes last season, denuding them of leaves in July. Gooseberries rather thin; Figs the same. Nuts abundant.—JAMES SHEPPARD.

THE FINCHLEY VINE.

ONE of the finest vines in the country is now in full bearing in Kaye's nursery at Finchley. It is not so large as either the Hampton Court or Cumberland Lodge vines, much smaller, in fact; but in point of size of bunch neither of these, nor any other vines we are acquainted with, approach it. The Cumberland Lodge vine is considerably finer than the Hampton Court, and bears about two thousand bunches, looking meanwhile as if cribbed and confined for room, as the shoots reach the extremity of the great house, and are there cut off, just as we are obliged to do in small vineries; but one of the Finchley bunches is as large as two of those at Hampton Court and Cumberland Lodge. The curious part of the matter is that no unusual pains were spent upon the making of the border in which this fine vine grows. It is made on a hard clay bottom, a considerable quantity of brick rubbish being placed on that part, with a slope to a drain at the front of the border, which is about fifteen feet wide. It is not quite raised above the level of the surrounding ground, as most borders are with our great growers. The soil of the border is not that choice kind of loam recommended by most writers on the vine, but just the top spit which had been cleared off building ground in various parts of the district—now and then very sandy, occasionally of a stiff and unctuous clayey texture, with here and there a lot of brick rubbish, in short a mixture of the better kinds of earth and rubbish which are so easily obtained in a suburban or other district where much building is going on. The border is about four feet in depth. No manure is mixed with its ingredients, except what little may descend from the remains of the annual winter covering of stable manure with which it is protected during the winter and early spring months. The house is eighty-nine feet long by eighteen feet wide, span-roofed, and heated by hot-water.

The vine enters at the middle of one side, and goes across the roof, making five equal breaks, or, in other words, sending five fine opposite branches to each end of the house. The base of the main stem is of great thickness. It quite fills the house, and would no doubt furnish three times the superficies it now does if the house and border were sufficiently extended. It bears four hundred bunches of grapes, weighing from 1½ to 2 lbs. each. The attainment of the result we have mentioned by simple means is well worthy of record. It surely proves that vine culture of the highest character is a much more simple affair than amateurs and many practical horticulturists believe it to be. If the amateur, instead of building a few distinct small houses, would erect a good roomy one, and cover the roof with vines, it would give much more satisfaction than is often attained by those who have not much time or attention to devote to glass houses. A large span-roofed vinery of the sort might be made to afford a very agreeable promenade in winter, a home for considerable quantities of greenhouse and bedding plants, shelves for early-potted strawberries on each side, room for a fine bloom of chrysanthemums in autumn, and not a few other things for which special structures are often provided. In summer, when the fruit would be ripening and the foliage occupying the roof, we care very little for the indoor garden, and are usually too glad to leave it, while the plants we have named must for the most part be out of doors or in frames. We recommend vine-growers, who have the opportunity, to see the Finchley Vine during the ensuing fortnight.

Wiring Garden Walls.—The French system of placing wires over walls, or in any position in which it may be desired to have neatly trained fruit or other trees, having become now of frequent use in England, and as the *raidisseur* used to tighten the wire often cuts or breaks it, I think the following plan preferable and cheaper. At the extremities of the wall nail pieces of wood similar to garden sticks about an inch square, and drive eyed nails or hooks about ten feet apart in the wall; fasten the wire to a small staple driven into the wood at one end of the wall, pass it through the eyed nails, and secure and tighten it at the other end by a common joiner's iron screw about an inch and a half long, through which a hole has been previously drilled near the top end to receive the wire and hold it in its place whilst the screw is driven fast into the wood in the usual manner. By this means the wire can be made as tight or slack as you choose; whilst with the *raidisseur* another turn is perhaps necessary, and as the wire cannot bear the strain, it breaks.—C. POCKLINGTON, *West Skirbeck*.

Vine Budding in August and September.—In this operation the bark of the vine stock should be cut clean off, according to the size of the bud to be put on, inserting the lower end of the bud in a slit, so as to keep it firm. I have practised this kind of budding on the laterals of old vines for five years, but the results were not satisfactory, until I discovered that the last week in August or first week in September was the best time to perform the operation, and also that each bud must be protected from the drying influences of the atmosphere by bandages of cotton wool or other similar material, which have to be kept constantly wet for three weeks. Unless this is done, budding of vines will not be satisfactory, and people who profess to have budded vines never have done them satisfactorily. I do not call successful budding that which gives you only one "take" in half a dozen, or perhaps more, and no fruit even from that; but if budding in September is managed properly, every eye will take, and show fruit just as freely as the natural buds of the vine. The wood should be in a half-ripe state, and pliable, so as to bend uniformly upon the cut that it is to cover.—Z.

Pinching the Shoots of Fruit Trees.—The principal rule to bear in mind is this—pinch the strongest shoots first, and only those which are near the top of the tree; a week afterwards take those lower down, and so on in succession until all have been done. Never denude the tree of much foliage at once. Pinch the most vigorous portions of the tree most, and allow the weaker to grow a little longer. Thus the shoots at the top of a pear tree on a wall should be pinched to three or four eyes, while at the bottom of the wall they should be allowed five or six.

Manuring Fruit Trees.—Don't manure your fruit borders, is frequently the advice given to inquirers; under certain circumstances the advice is good, such as in newly-made borders of rich turf, strong soils, and in low situations; but to follow such advice on light sandy soils or porous gravelly subsoils and high localities, would be wrong, and would lead to nothing but disappointment. Under these circumstances, good rotten manure I will not say *may* be used to advantage, but *should* be used liberally for fruit trees of every kind, and especially for peach trees.—F.

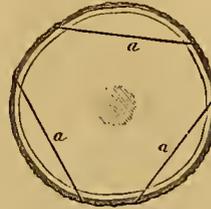
THE PROPAGATOR.

THE ART OF GRAFTING.

(Continued from p. 106.)

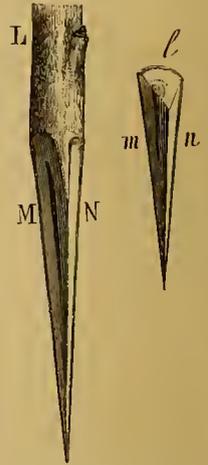
OBLIQUE CLEFT-GRAFTING.

LOOKING to its future development, a stock that is already pretty strong may be furnished with more than two grafts; but as we can place only two in one transverse cleft, we should have to make other clefts across the centre, the result



Section of the stock.

of which would be to enfeeble the stock. To avoid this we can employ a method which will leave intact the heart of the tree, and at the same time allow us to augment the number of the grafts. The stock having been sawn across and smoothed down with the pruning-knife, we make several clefts at the side (*a, a, a*), which, to speak geometrically, are, with reference to the section of the cutting, chords in the circle, and not radii or diameters. In order that the scion (*L*) may be adapted to the incision in the stock, it must be cut obliquely, so that while only one of its sides (*m*) slants towards the centre, the other (*n*) will only have the bark removed as far as the albumen. In the other methods of ordinary cleft-grafting those scions which have too much pith may always be cut in this way: in that case the stock is cleft obliquely and not diametrically, in order to spare the central part.



Mode of Cutting the Scion for Oblique Cleft-grafting.

SEASONS FOR ORDINARY AND OBLIQUE CLEFT-GRAFTING.

The principal seasons for cleft-grafting are spring and the end of summer. In the south of France, where the winters are very mild, it is practised with success from the month of December. Towards the north they seldom commence before March or April. In those districts where growth is prolonged, the summer-grafting is very often done in the autumn. Thus there are two distinct seasons, known in practice under the names of spring grafting and autumn grafting.

SPRING GRAFTING.—March and April are the usual times for the first cleft-grafting. In warm countries it may begin earlier as it may in the case of subjects of very early growth. The scion-branches, cut beforehand, are to be placed in soil, or in a vessel full of sand, and deposited at the north side of a building, or in the shade of a tree or bush. They may also be removed from the parent-tree at the time of grafting, provided the sap has not yet begun to flow in them. The stock should be headed down on the day of grafting. When this is done sooner, the cut has to be renewed, in order that the scions may be inserted upon a healthy and fresh surface. If there is any difference in the state of the sap of the two parts, the scion should not be so advanced as the stock. After grafting, should there be a continuance of great heat, the graft must be covered with moss, or a piece of paper twisted into a cap placed over and fastened to the stock.

AUTUMN GRAFTING.—Cleft-grafting in autumn or the end of summer is performed in the same way as in spring. Nothing is changed but the season. This period comprises the months of August, September, and October; but the moment should be seized when the sap is on the decline, the branches of the stock well ripened, the buds well formed, and the leaves, although still adhering, are ready to fall. If grafted too soon, the scion might sprout, and this precocity in the end of the season would be fatal to it in winter, as it would be more exposed to the cold than if it had remained dormant. On the other hand, if grafted too late, the scion could no longer unite with the stock, on account of the disappearance of the cambium, and when spring arrives it would be found to be

withered. So we cannot lay down an invariable rule for the time proper for each species or variety; the condition of growth is the point on which success chiefly depends. Two neighbouring subjects of a similar species may demand a difference of three weeks in their autumn grafting. In this matter use is the best guide. Among the subjects grafted in autumn, the plum, and especially the wild cherry, are the better of it in this respect, that, their development in the following April being much earlier than if grafted in spring, they will have less to fear from the vicissitudes of the weather and the attacks of insects. The scions should be cut just before being used, stripped of their leaves at once, and have their ends placed in a vessel of water or in cool sand. In autumn grafting cold mastics have this drawback, that their unctuousness suffers from the action of the frost, which extends itself to the tissues of the grafts. A warm composition which hardens at once should therefore be employed. However, a mastic which is too easily softened or which does not harden sufficiently can always be covered so as to protect it from the frost.—*C. Baltet.*

(To be continued.)

EASY WAY OF STRIKING CUTTINGS.

As it will soon be time to begin striking cuttings to supply young plants for next season, perhaps a few hints on the easiest way of doing so may prove of use to some of your readers. It is a great mistake to leave such work till late in the season; late struck cuttings are never strong or well rooted, and when winter comes on, are liable to die off, whereas those struck early become nice strong young plants. I have begun making mine; I did so at the same time last season, and during the winter I did not lose more than two or three dozen plants out of a large number. I have bedded out nearly two hundred dozen plants this summer that I struck last season. I always strike my Pelargoniums, variegated and all kinds, out in the open border. One is always sure to have some spare spot that can be utilised in this way. Then in the first or second week in September I take them up and pot them, and when the time comes to take them in they will have become well established. My Lobelias, Petunias, &c., I strike in wet sand in common saucers or little shallow pans. These I fill with the sand, wet it, and then I prick in my cuttings. I never let the sand get dry, and in a few days my cuttings are ready to pot off. This is a sure way of striking cuttings, and you can strike them by the hundred—I was going to say, by the thousand—in these little saucers, as they may be pricked in as close as they will stand. By treating cuttings as just directed you will find them to give little trouble, as those out in open borders will not of course require the watering and shading, &c., that they would do if they were in pots in the greenhouse or in a pit, and those in the pans will root so quickly that you will be surprised at the number you can raise in succession in this way. A. H.

Upper Norwood.

GARDENING ROUND LONDON.

(DURING THE PRESENT WEEK.)

BY OUR SPECIAL REPORTER.

PRIVATE GARDENS.

Conservatories.—Camellias for early blooming that have completed their growth and set their flower buds too thickly have the weakest of them removed, leaving only as many as the plant can properly carry with advantage. If Camellias are now allowed to suffer from want of water, they may go on apparently all right, and their flower-buds may swell as if nothing had happened, but when the blooming season has arrived, the buds will in many cases drop off. Late-flowering Azaleas are still subjected to a warm genial temperature and free use of the syringe, whereas in the case of those that flowered early, and which have completed their growth and are forming flower-buds, the overhead sprinklings are gradually lessened and the atmospheric temperature lowered. All pinching in of the young shoots of Azaleas, Coronillas, Cytisuses, and similar plants is now discontinued, it being undesirable to cause them to form more young wood this season. The branches of Fuchsias grown on trellises are regulated, and in order to make them produce flowers and wood more freely, the borders are frequently watered with

guano or other manure-water. It is desirable to induce them to produce as much bloom as possible before the end of September; after that time they are gradually cut down, and the borders are kept dry, unless other plants are associated with them. Tritonia aurea is at present one of our gayest conservatory flowers, and it only requires a short stake or two and abundance of water to maintain it in fine condition for a considerable length of time. Coleuses are stopped at every third or fourth joint, in order to keep them bushy, for under even partial shade they are apt to become leggy. Erythrinae done blooming are turned outside and gradually dried off.

Orchids and Ferns.—Orchids which have large pseudo-bulbs require less water than others, but in the case of all kinds the supply of water is now a little diminished. Shading, unless when absolutely necessary, is discontinued. Tree fern stumps on which small Polypodiums, Davallias, and similar ferns are growing are daily syringed in order to insure a sufficient supply of moisture. A fine effect is often produced by covering the trunk of a tree fern with variegated Ivy, intermixed with several little Pterises, Adiantums, and other Ferns, together with Selaginellas of the Martensii section.

The Flower Garden and Shrubbery.—The heavy rains which we have lately had have been detrimental to flower gardens. Verbenas, and similar plants, have speedily covered the beds, and have flowered well, but the blooms are a good deal spoiled. Foliage plants have, however, done well. Iresine Lindenii has seldom been seen so fine as it is this season. Yellow Calceolarias near London have been a complete failure. Geraniums are being propagated, but not in the open border to such an extent as usual, for the late heavy rains have considerably damaged those already put in out of doors. Verbenas and Heliotropes are still being propagated. For these a pit about eighteen inches in depth is made towards the end of June or first of July, and is filled up with half-decayed leaves mixed with litter, the whole being firmly packed together and covered over with light sandy compost, over which is put a thin layer of sand. This induces a gentle bottom heat, and affords a suitable medium for late propagating. Hollyhocks from this year's sowings are being transplanted into well manured deeply worked borders, keeping them about eighteen inches apart, so that they can be lifted safely with good balls for transplanting. Pansies that are rooted are being transplanted into borders or into nursery lines farther apart than the cuttings stood. Wallflowers and Sweet Williams are always most satisfactory when treated as biennials; they are, therefore, now being transplanted from the beds in which they were pricked out to where they are to bloom, or else set farther apart than they formerly were, so that they may be safely transplanted next spring. Annuals are being sown just now for late blooming, and ground is being got ready for such as are intended for spring flowering. Where variegated Kales are used for winter decoration they are being transplanted; it is best to keep them in rather light soil than otherwise, for under such circumstances they become better coloured. Bulbous plants such as Ixias, Tritonias, Sparaxis, &c., are being lifted, but the different tribes of Lilies are left untouched, as they thrive best when left year after year undisturbed.

Indoor Fruit Department.—Vines done fruiting are encouraged to ripen their wood; a steady temperature and moderately dry atmosphere are maintained in houses in which fruit is ripening. For Melons a brisk temperature is maintained, and they are allowed plenty of air and water. A little powdered charcoal is placed around the necks of the plants to prevent rot, which so often attacks them there especially in dull weather. In frames the fruit is placed on pieces of wood, slate, stone, or tiles laid on the beds; those on trellises are supported on pieces of suspended board. Some of the Cucumber frames are having their linings renewed. Figs are divested of all suckers that spring from the root, and which are likely to rob the fruit of its proper nourishment. When crops of Peaches and Nectarines have been gathered, such trees as are in pots are commonly set outside on a well-sheltered border. Some, however, do not turn out their pot plants, but keep them always indoors, giving them as much air as they possibly can. Tomatoes in pots are kept as near the light as possible, and are supplied occasionally with weak manure water. Chillies in fruit-houses and frames are also kept near the glass. To these green-fly is a great enemy; they therefore now and then need a dip into a mixture of diluted tobacco-water in which a little soft soap has been dissolved, or they are laid on their sides in a close frame and fumigated in the evening, removing them next morning and heavily syringing them.

Hardy Fruit and Kitchen Garden.—The shoots of young espaliers are regulated from time to time, so as to keep the trees in proper form. As regards early fruits, do not gather them too early; when that is done they seldom attain their real flavour. On the other hand, they must not be allowed to get over ripe, for that is quite as bad as too early gathering. Avoid, too, harvesting them during the hot or sunny portion of the day. With regard to vegetables

a small sowing of Cauliflowers may be made where the plants can be protected through the winter; but the main sowing should not be made for a few days yet. A sowing of Cabbages was made about the 5th of the month, where ground permitted the seed to be got in; but where it could not be sown then owing to the ground being unworkable, no time must be lost in getting it in. The late crop of Broccoli has, in most places, been planted out about two feet apart each way. A main crop of the prickly Spinach has also just been sown, and to succeed it another will be made about the 20th or 24th of this month. Endive for a late crop has just been sown. Turnips are being thinned. A few of the white turnip-rooted Radishes are sown, and also some of the white and black Spanish kinds for late autumn and early winter use. Chicory is thinned out to three inches apart. Lettuces, as they get strong, are being tied up in order to cause them to heart. Tomatoes planted against walls are kept nailed and stopped, removing all unfruitful laterals, and pinching out the points of the main stems when a sufficiently large crop has been set. Onions for standing the winter and for salading are being sown on well-drained soils.

NURSERIES.

Indoor Department.—Cuttings of Geraniums are being struck in frames or cold pits. The old plants are cut up into as many pieces as will make cuttings, and the finer kinds are inserted singly in small pots. Centaureas are increased under handlights and in frames. Lobelias for seed are kept in cool and airy houses, and the pods gathered as they ripen. The finer kinds of Tropæolums are increased by means of cuttings placed thickly in a four or six inch pot, a size convenient for winter storage. Such Alternantheras as remain after the summer sales, are kept in any odd corner, and partly starved, in order to make them more capable of undergoing the hardships of winter; some consider that these give more satisfaction than young plants, as they winter better and yield a great quantity of cuttings in spring. Daphnes are being grafted in intermediate houses, the plants being placed on their sides in frames within the house, which are kept closely shaded. The operation of grafting Camellias and Epiphyllums is also being carried out. Fern spores are being sown in pots half filled with crocks, over which sandy peat is placed, so as to rise a little above the rim of the pot. When sown, the plants are placed in close moist frames, and are covered over with bell glasses. Young Palms in seed pans are being potted singly into small pots. Young Erythrinias are now placed outside. Eranthemms and Gymnostachyum are being increased by means of cuttings. Sonerilas, lately layered, are now being separated and repotted, using for the purpose a compost of rough peat, sphagnum, and sand. Pitcher-plants are being examined, and any that require it are top-dressed; they like plenty of heat and moisture.

Outdoor Department.—In some cases budding is finished, but in many instances a good deal has yet to be done. The young stocks being in lines about two feet apart, one man goes over them, making an incision and inserting the buds, and another comes after him and ties them up with matting or worsted. The training of young fruit trees occupies a good deal of attention, for where they are thickly planted in the rows every alternate plant is trained along the lines, the others across. Hoeing and weeding occupy also a considerable amount of time, especially amongst seedlings and thickly transplanted lines of young conifers and other shrubs. Herbaceous plants are being increased by means of cuttings or layers. The finer kinds of Periwinkle are being divided into small rooted tufts and planted a few inches asunder in nursery lines twelve inches apart. Phloxes, such as frondosa, Nelsoni, and others of that class, are being divided into little rooted crowns and inserted thickly in lines about nine inches apart. Young Phloxes, belonging to the tall section, are being repotted from the cutting pans into small sixty-sized pots, using a compost of yellow loam, leaf-mould, and a little sharp sand. Pinks and Pansies lately put in under handlights, now that they are fairly rooted, have the lights removed. Bedding Violas are being taken up, divided into as many pieces as will make nice little plants, inserted in lines a few inches apart, and protected for a time with mats supported on hoops or stakes, or are covered with frames in order to throw off drenching rains. Pansies are never planted where the ground is apt to be saturated with stagnant water in winter. Seeds of herbaceous and annual plants are now being carefully harvested.

MARKET GARDENS.

The chief marketable crops just now are Vegetable Marrows, Cucumbers, French Beans, Lettuces, and Onions. During chilly days the pits in which the Cucumbers are grown are shut up a little earlier than in bright weather. Vegetable Marrows are still growing apace, and bearing abundantly; even plantations made late exhibit considerable progress, and are rapidly covering the ground. From Tomatoes in snug corners a few fruits have been obtained, but

as a rule they are not yet ripe; they, however, promise to produce plenty of fine fruits. The Newington Wonder French Bean is still the greatest favourite. What are called Runner Beans are extensively grown for a second main crop; they afford more bloom than the dwarf Bean, and consequently more fruit. These do not grow quite so tall as the Scarlet Runner. The white-flowered kind is grown in preference to the red, as it is said to set better; both are, however, largely planted. They commonly yield, in fine seasons, from six to ten pods on each spike; but if the weather is unfavourable to their setting, they seldom produce more than two. The main late crop of Celery has just been planted in lines five feet apart, forming, as it were, four-foot-wide beds and one-foot alleys, in which the Celery is planted. Between the lines of early planted Celery the intermediate cropping of Lettuces is now being tied up to blanch, and some of them are removed for market, leaving only the line of Cauliflowers along the centre. Ground just cleared of a crop of Cauliflowers is well manured, dug over, and the surface made a little level by means of harrowing it. A portion of this ground was sown the last week of June with early Cabbages, and the other portion the first week of this month with the same. The ground just vacated by the removal of the Potato crop is being planted with Waleheren Broccoli, previous plantings of which are meeting in the rows although two feet apart; these, together with the others being planted, are all expected to yield a crop before the severity of winter sets in. Ground for Spinach sowing is being prepared. A sowing of the prickly was made about the 10th of this month, another will be about the 20th or 24th, and one the second week in September. The first two sowings furnish abundance of leaves throughout the winter, and the last one comes in useful just before the first crop of spring-sown smooth-leaved Spinach is ready. Spring-sown Onions, which still continue to grow, are being pulled and carted to market. All Potatoes are removed for market except such as are required for home consumption and seed. Radishes are being sown as required in cool moist situations; the produce of these sowings is said to be as good as early spring Radishes.

COVENT GARDEN MARKET.—August 16th.

Flowers.—Japan Lilies, now finely in flower, are abundant; as are also bell flowers, more especially Campanula pyramidalis, and Cockscombs. Conspicuous amongst fine-foliaged plants are India-rubber trees, young Palms, and Dracænas. Crotons, singularly enough, one seldom sees, while Screw Pines are seldom absent from the Central Row. Cut flowers, both from hardy and tender plants, are now abundant, especially white and fragrant kinds, which are used in the best bouquets.

Fruit and Vegetables.—Hardy fruits are being largely imported from the Continent, home-grown produce being comparatively scarce. Prices are, therefore, high, compared with what they generally are. Gooseberries and Currants of different kinds still make their appearance; as soon as they arrive, the best fruit is selected for dessert, the rest is sold at low rates for cooking purposes. Among indoor fruits, Grapes are the best. Melons are for the most part inferior in flavour. Pine-apples are good, large, and plentiful. Cucumbers, although supplied in large quantities, are a good deal tinged with yellow; good straight specimens of them realise twice as much as crooked ones. Chillies and Tomatoes are coming in in abundance. Among vegetables the commoner kinds are sufficient for the demand. French Beans and Vegetable Marrows especially are very plentiful. Root crops are also furnished in good condition. Onions present, as yet, little signs of ripening.

PRICES OF FRUIT.

	s.	d.	s.	d.		s.	d.	s.	d.
Apples .....half sieve	2	0	to	3	Oranges	100	8	0	to 15
Apricots .....per doz.	2	0	4	0	Peaches.....per doz.	12	0	18	0
Figs .....per doz.	2	0	4	0	Peas.....per doz.	2	0	4	0
Filberts .....lb.	0	9	1	0	Pine Apples.....lb.	3	0	8	0
Grapes, hothouse...lb.	3	0	6	0	Plums.....per box	3	0	4	0
Lemons.....100	7	0	10	0	Walnuts.....bnschel	10	0	25	0
Melons.....each	3	0	to	6	ditto.....per 100	1	0	2	0
Nectarines.....per doz.	4	0	12	0					

PRICES OF VEGETABLES.

Artichokes.....per doz.	3	0	to	4	Mustard & Cress, punnet	0	2	to	0	0
Beans, Kidney...½ sieve	1	6	2	0	Nasturtium seed for pickling.....per pint	0	4	0	0	0
Beet, Red.....doz.	1	0	3	0	Onions.....per bunch	0	6	0	0	0
Broccoli.....bunch	0	9	1	6	Onions.....bnschel	3	0	6	0	0
Cabbage.....doz.	1	0	2	0	pickling.....quart	0	9	0	0	0
Carrots.....bunch	0	6	0	9	Parsley, ...doz, bunches	3	0	4	0	0
Cauliflower.....doz.	2	0	6	0	Parsnips.....doz.	0	0	1	0	0
Celery.....bunch	1	6	2	0	Peas.....per quart	0	0	1	6	0
Chillies.....per 100	1	6	2	0	Potatoes, Kidney...cwt.	4	0	7	0	0
Coleworts doz. bunches	2	6	4	0	Potatoes, Round.....do.	3	0	7	0	0
Cucumbers.....each	0	6	1	0	Radishes doz. bunches	0	6	1	0	0
Endive.....doz.	2	0	0	0	Pods for pickling, pint	0	4	0	0	0
Fennel.....bunch	0	3	0	0	Salsify.....do.	1	0	1	6	0
Garlic.....lb.	0	8	0	0	Scorzenera.....bunch	0	9	1	3	0
Gherkins.....per 100	1	6	2	6	Shallots.....lb.	0	4	0	6	0
Herbs.....bunch	0	3	0	0	Spinach.....bnschel	2	6	4	0	0
Horseradish.....bunch	4	0	6	0	Tomatoes.....doz.	2	0	4	0	0
Leeks.....bunch	0	2	0	4	Turnips.....bunch	0	4	0	8	0
Lettuces.....score	0	6	1	6	Vegetable Marrows doz.	2	0	3	0	0
Mushrooms.....pottle	2	0	3	0						

THE GARDEN.

“ This is an art

Which does mend nature : change it rather : but
THE ART ITSELF IS NATURE.”—*Shakespeare.*

THE SIX OF SPADES.

CHAPTER XIX.

Mr. Chiswick on Bedding-out (continued).

ARRIVING, we shall be as surprised and delighted as Cinderella herself,—

“ When tapers shone,
And music breathed,
And beauty led the ball.”

Surprised! Why there is not one in a thousand, even of those who love a garden—nay, there is not one in a hundred of my brother gardeners, who knows the marvellous charms of a spring garden extensively and tastefully arranged; and, had I power and permission, nothing would please me more than to act as a sort of horticultural Mr. Cook, of unbounded benevolence and wealth, to superintend gratuitous excursions of the floral fraternity to Belvoir, Cliveden, Wardie Lodge, and elsewhere, from the middle of March to the end of April. Our vernal flowers have gone gradually, but in many cases entirely, from our gardens. His reverence told us, a few Sundays ago, that people nowadays were quite as fond of telling and hearing new things as ever they were at Athens when St. Paul was there; and this love of novelty and display has been at work in our guild, and induced us to despise and discard the fair and faithful favourites of the past.

Two of the songs with which our old friend Mr. Grundy has occasionally entertained us always remind me of our disgraceful and perfidious misconduct, as gardeners, with reference to hardy flowers. In his “Labourer’s Song,” one rustic complains to another,—

“ Folks thinks still
Nowt’s good now as used to was,
My owd friend Bill.”

And there has been a sad season, not long past, in horticulture in which few cared for that which all could have, and all things old were vile. In another melody he tells us how the proud ploughboy, on his promotion, cruelly cuts his former friends:—

“ And little Nell, I loved so well,
And walked so wi’ o’ Sundays,
Good lor, says I, don’t talk to me,
Ise mon at Mestur Grundy’s!”

So, I fear, it has been in many cases with the gardener. He was promoted to serve in houses of glass; he was introduced to gorgeous company; he was wooed by a more brilliant and aggressive beauty; and he forgot, as he gazed upon Stella’s glowing charms, the sweet little modest Polly-(anthus), whom once he “loved so well.”

But again I say “surprised,” for who can pass from the external gloominess of an English March, the leafless hedges, the brown fallows, the slaty clouds, the flowerless gardens, into a scene of the liveliest loveliest beauty, and not feel surprise? And delight! such a sudden and sweet refreshment! I remember, when I lived near London, being in a crowded omnibus one sultry summer’s day in the Strand, with the large mother of a thirsty babe on the one side and a German Jew, who had not been smoking the sort of tobacco which I like, on the other. I was feeling about as comfortable as a Croton in a coal-pit, and was literally gasping for breath, when the omnibus, having made an unusual progress of nearly eighty yards, drew up just opposite one of those narrow streets which lead from the great thoroughfare to the Thames, and a cool, fresh, delicious breeze from the river blew upon my heated brow! Such a revival to the floral spirit is the first sight of the flowers of spring.

Recall the charming diversity of colour and of form which they, the annuals, perennials, and bulbous plants of spring, present to our admiration. Of form, from the tall imperial *Fritillaria*, having the resemblance of crown and of sceptre also, to the prostrate *Stonecrop*, carpeting the ground beneath.

Of colour, what a range, what a rich variety! All colours, primary and intermediate, brilliant and soft, positive and neutral—colours to harmonise, colours to contrast, the colours which I like, and the colours which you like—all of them are here. Does your eye delight in the glow and brightness of the more vivid tints? Look at that *Anemone*, well-named “fulgens,” all afire in crimson glory! Regard these *Tulips*—General Garibaldi, in his scarlet uniform, or royally named and royally appareled, *rex rubrorum*, the King of the Reds! Gaze upon that *Gentian* (the vernal), luminous, gleaming like the breast of a humming bird with an intense and dazzling blue! Watch that clump of the yellow *Crocus*, as they open to receive the kisses of the sun (if any); and what is there in the stove, or even in the summer garden, in *Orchid*, *Allamanda*, or *Calceolaria*, which can vie with them in their golden sheen?

Or have you what is called a more “quiet taste”? Bend over this bed of *Myosotis dissitiflora*, bluer than the turquoise, blue as the heavens, and you need not ask from the gardener, or search in floral dictionary, a translation of the name, for the flower itself speaks it in your ear and whispers, “Forget-me-not.” Or turn to that patch of the exquisite, dainty, little *Scilla* (“from the Scilly Islands,” I once heard a gentleman, who set up to be a wit, remark to a lady, who promptly set him down by replying, “Did you come over in the same ship?”), or to that sheet of roseate *Silene*, blue mountain *Anemone*, purple *Pansy*, pale yellow *Primrose*, bright yellow *Cheiranthus*, lilac *Aubrietia*, or (yet more appropriate to one who is talking of sheets) to those snow-white masses of *Candytuft* (*Iberis correaefolia* is the fairest of the fair), of *Alyssum*, *Arabis*, *Saxifrage*, *Daisy*, and *Snowdrop*.

Now glance at the combinations; at that bed of golden *Feverfew*, dotted here and there with the purple *Crocus*; of white *Candytuft*, from which at intervals the bright red *Hyacinths* rise; or of *Cerastium*, with small circular patches of *Scarlet Anemone* or *Cliveden Pansy*, or of *Erica carnea*, with the golden *Arabis* intermixed; or of *Sedum acre aureum*, with white and red *Tulips* inserted à la pincushion. Would you have something more striking and effective even than these? Copy two beds, which I first saw at Belvoir and shall never forget; the one of

“ *Daffodils*,
Which come before the swallow dars, and take
The winds of March with beauty;”

intermixed with purple *Hyacinths*; and the other of *Aucuba japonica*, which was blended with the many-coloured *Kale*. So impressed was I with the latter combination, that Mr. Ingram, a gardener worthy of that princely place, and one who, like the Castle by which he dwells, “hath a pleasant air” and, like a true artist, a kind brotherly sympathy with all who love his art, noticed my interest and gave me some seed. This was sown at once, came up, was transplanted, and finally placed, in the autumn, in a bright bed of healthy young *Aucubas*, selected for the purpose. Alas, alas! one moonlight February night, that footman, whom I never could admire, although his calves were grand, left the gate between the park and the pleasure-ground open; and when I went to take a last look at my fires, the cattle were on my flower-beds chewing their cuds, and their cuds were composed of my variegated *Kale*, which they had brutishly mistaken for *Cow Cabbage*!

I have no time to speak of harmonies and gradations in colour, of rings, ribbons, pyramids, and baskets; but I must say a few words about foliage, because I have heard some folks, who should know better, say that, prate as we may about spring flowers, we can speak nothing in praise of spring foliage. No praise! Why, after admitting a defeat in the darker leafage and sounding a retreat on our *Creeping Bugle* (*Ajuga reptans*) before the *Coleus*, *Amarantus*, *Iresine*, and *Beet*, and after a further concession that we have no single leaf so beautiful as Mrs. Pollock, we advance our whole army for a general engagement, with no fear of the result, and, in the poetical words of *Transatlantic fervour*, “we pounds the univarse smart.” What foliage is so attractive in the summer garden as that of the gold-tipped *Stonecrop* (*Sedum acre aureum*), of the *Daisy*, which has leaflets of green and gold (*Bellis acubæfolia*), or of the exquisite variegated *Thyme*? Is not the golden *Feverfew* brightest in spring? Are not the

variegated Arabis, Euonymus, and Periwinkle, the silvery Cerasium, Centaurea, Gnaphalium, and Santolina, most beautiful in their early growth? When is the Dactylis, or our old friend the Gardener's Garter, so silvery or so graceful as in spring? Stoop now to admire this variegation of white and of gold in *Lamium maculatum aureum*, of green and silver in that charming *Spiræa*. And now regard the manifold varieties of "that rare old plant, the Ivy-green," forming such a natural floor or cincture for the smiling splendour of the spring!

And all the while, what fragrance from Violet and Primrose, from Hyacinth and Wallflower,* from *Daphne Mezereon*, and Thyme! Mr. Ingram plants large beds of his Russian violets near the entrance gate of the Belvoir garden, to breathe a welcome to the visitor, but from all parts of it sweet incense rises heavenward.

I have said nothing of the flowering trees and flowering shrubs, which should form a part of all spring gardens, surrounding them, and here and there forming centres for the beds; the blossoming fruit trees, Peach, Almond, and Cherry; the Laburnums and Syringas, the Rhododendrons and Azaleas, the Weigelas, Ribes, and Berberis. I have passed over hundreds of bonny winsome flowers. Volumes might be written, volumes have been written, about them.

There yet remains to be mentioned, and that with thankful praise, the most gracious and precious attribute of these bright vernal flowers—they can be multiplied quickly and abundantly, and they scarcely need any cultural care. Many of them cover the ground with wonderful rapidity, and send out roots as they spread. Thus they are propagated readily by division, and most of them by cuttings and by seed also. They are just as beautiful and enjoyable in single plants by the cottage door as in masses nigh the mansions of the rich. Like all the best gifts of our merciful Father, *they are for all*. They demand neither money nor time. All they ask is, that we will look on them and love them with

"Pure eyes and Christian hearts."

S. R. H.

(To be continued.)

DANGER IN OUR "DUCK-PONDS."

THE ugly duck-pond-like pieces of artificial water, which so often disfigure our pleasure-grounds, are sometimes the cause of fatal accidents to children. A sad affair of this kind has recently occurred in a private garden in Berkshire, and an acquaintance of our own has lately lost a boy eight years of age in the same way, in Sefton Park. The *Times* very fittingly heads its last report of a case of this kind "Criminal Carelessness." These accidents result chiefly from the ugly and stupid way in which the margins of our artificial waters are made. Instead of the bank gradually sloping into the water, as is usually the case in natural lakes, it is frequentlyhipped in an abrupt manner, leaving the water generally too deep at the margin. All artificial waters near a house, or in any position where there is danger of children falling into them, should be made very shallow at the margin. The bank of turf should slope easily and gradually into the water, never jump abruptly out of it, and the bottom should slope easily and gradually from the margin. So arranged, it is almost impossible that an accident can happen. And it is worthy of notice that the truest art and perfect safety go hand-in-hand in this case, for the common abrupt margin is an eyesore, and wrong in every way.

EVERYTHING about Leicester Square has long been bad enough, but a few months back the wildest imagination would have had some difficulty in realising its present condition. Bands of tumblers entertain audiences of some two or three hundred people, who often completely block up the east side of the square. Yesterday a man was swallowing knives and evolving reels of cotton from his ears, to the infinite amusement of a vast crowd. The ground itself presents the most dilapidated and unsightly appearance, worn into deep ruts, and strewn with blocks of paving stones. The horse is a particoloured of red and white, and covered with placards. Not a policeman is to be seen.

* "Very delightful," as Lord Bacon says, "to be set under a parlour or lower chamber window."

NOTES OF THE WEEK.

— THE playground which the Marquis of Westminster has presented to the children of Pimlico, in Ebury Square, was thrown open to its juvenile possessors on Monday last.

— RECENTLY some Black Country excursionists unlawfully entered the fruit gardens in the Vale of Evesham, consumed great quantities of fruit, and injured the trees a good deal.

— LOVERS of hothouse bulbous plants will be interested to learn that *Crinum McKenii*, a fine new kind from Africa, is now in flower in Mr. Bull's nursery. The flowers are white tinged with pink, and very large in size.

— THERE is, we are informed, a large display of very fine Asters now in perfection in Mr. Chater's Nursery at Cambridge. They are interesting as the result of a peculiar mode of cultivation, on which we hope to say a few words by and by.

— THE finest hardy perennial we have noticed flowering during the week is *Chelone obliqua*, a plant now seldom met with in London gardens. It grows about a yard high, and the flowers are large and of a lovely rosy purple colour.

— THE beautiful "Scarborough Lily" (*Vallota purpurea*), is growing and flowering in one of the sub-tropical beds in Battersea Park. Its stout scapes, well furnished with erect-growing scarlet flowers, distinguish it from its associates, few of which can be compared with it for brilliancy of colour.

— AT the thirty-third annual meeting of the Royal Botanic Society last week, it was reported that the total receipts of the present year amounted to £8,619 15s. 6d., a sum much in excess of the money received last year. The number of new fellows admitted during the year was 104.

— A HANDSOME Everlasting Pea, a seedling, the result of a cross between the rose and white kinds, is now in fine bloom in the Gonville Nurseries, Cambridge. It is named *Lathyrus latifolius*, var. *Chateri*, and is a profuse bloomer, the flowers being white flushed, and delicately striped, Carnation-fashion, with purplish rose; altogether a desirable addition to our Everlasting Peas.

— IN America, as is well known, Indian Corn is eaten at every table in the green state, and a delicious vegetable the "green corn" is. It is used in various ways, but is by preference eaten from the cob or head. A recently arrived Hibernian, who was greatly taken with it, and had greedily bitten off all the sweet soft pea-like grains, called out to the "help," "Waither! come and pnt more pais on my stick."

— LORD EBURY, Sir Francis Lycett, Mr. Thomas Brassey, M.P., Mr. Thomas Baring, M.P., Mr. David Chadwick, M.P., Mr. James Figgins, M.P., Captain Douglas Galton, C.B., Messrs. R. Dudley Baxter, G. L. Banks, Blanchard Jerrold, Hodgson Pratt, and James H. Rigg (Wesleyan Training College), have joined the Lord Mayor's Committee for the purchase of the Alexandra Park, and the development of the property in the interests of the people.

— REFERRING to Mr. Smith's gift of seats for the Thames Embankment, one of our morning contemporaries writes:—"What seems most wanted now is some covered place where people, waiting for the boat, or enjoying the air, might take refuge from rain and snow. If any wealthy citizen seeks for pure glory—and in consequence of constitutional reasons declines to emulate Mr. Stanley in penetrating Africa—we advise him to pnt us up in many parts of London, arcades and shelter-seats like those of Bologna, Hastings, and Milan. We shall forget many great men, but never that noble citizen who does this kindness for wet and windy London."

— A BEAUTIFUL and very distinct species of *Gladiolus* (*purpureo auratus*) is at present flowering in the open border in Mr. William Bull's nursery at Chelsea. The flowers are more cup-shaped than in the ordinary forms of *Gladioli*, and are of a greenish sulphur-yellow colour, the three lower petals having bold and distinct stripes of rich dark violet running along their centres. The spikes are richly clothed with blooms, which, in the case of well established plants, will doubtless be of good size and very effective. The whole character of the plant is, however, less robust than that of our ordinary kinds of *Gladioli*.

— THE Bradford Corporation, who already hold two spacious and beautiful parks—Peel Park and Lister Park—have just purchased Low Close Farm, consisting of more than 17 acres of land at Horton, at a cost of £9,000, with the intention of forming, with the addition of adjoining land, a park of 30 acres in that district of the borough. This will constitute the third park of the Corporation, and it is intended to increase the number of parks for the borough to five, by forming another one in Bowling, by the immediate purchase of land for the purpose, and by converting the waste land of Bradford moor into a recreation ground.

— AMERICANS assure us that a Cabbage-leaf in the crown of the hat is a preventive against sunstroke. The expense is not extravagant.

— ONE of the best hardy shrubs in flower at present is *Clethra Michauxii*, a member of the Heath family. Plants of it may be seen in the pleasure grounds at Kew, producing racemes of fragrant white flowers in abundance. The Kew plants are between four and five feet high.

— THE Lambeth Vestry are endeavouring to prevail upon the Board of Works not to let two pieces of land on the Albert Embankment for building purposes, but to keep them open and plant them ornamentally in a similar manner to those already planted on the Victoria Embankment.

— THE Scammony (*Convolvulus Scammonia*) is this year flowering very freely in the Royal Botanic Gardens, Regent's Park, in the cold clay of which it has lived for a good many winters. The flowers are white with a yellowish tinge, and are produced in such numbers as to render the plant a conspicuous hardy climber.

— GREAT destruction has been caused by a cyclone to the clove plantations of Zanzibar. This island, lately brought into notoriety as the place whence news of the discovery of Livingstone came to the civilized world, seems to have been devoted almost wholly to the cultivation of cloves. But this industry, as, indeed, all others, has been prostrated by the completely destructive tornado in question. Cloves, in consequence, have increased in price.

— A LARGE number of Australian, Californian, and English fruit trees has been introduced into different parts of India; the Neilgherry Hills, in particular, bid fair to become a nursery of trees. English Oak has been reared at Ramikhet (the new military cantonment on the Kamaon hills); indeed, the rearing of fruit and forest trees is becoming a favourite recreation, and will probably prove a lucrative employment.

— ONE of the finest specimens of *Nepenthes Rafflesiana* that ever graced a London flower show, was exhibited last Wednesday at a meeting of the Royal Horticultural Society, South Kensington, by Mr. T. Baines, of Southgate. The plant was set on a pedestal, around which clustered some five dozen pitchers, which, as regards size, were more like pint jugs than the pitchers one usually sees on such plants. This fine plant excited, as well it might, the admiration of all who saw it.

— LOVERS of Phloxes and Pentstemons would now be repaid by a visit to the Lea Bridge Road Nurseries, where splendid collections of all the finest varieties of these fine families are now in blossom. There are also now in flower in the same nursery some new German Verbenas, which are particularly noticeable for the brightness of their colours and for their fragrance. They are likewise, owing to their robust habit and profusion of blooms, well adapted for bedding purposes.

— BY an Act of Parliament which has just received the Royal assent twenty-four acres of Crown land, lying on the north-east and south sides of Victoria Park, have been rescued from the encroachment of bricks and mortar, and in consideration of the payment of £20,450 by the Metropolitan Board of Works, have been transferred from the Commissioners of Her Majesty's Woods, Forests, and Land Revenues to Her Majesty's Commissioners of Works, to be by them laid out as a recreation ground for the people for ever.

— THE first of the public drinking-fountains erected at Paris by the munificence of Sir Richard Wallace has been recently inaugurated on the Boulevard de la Villette. In form it is a small square monument, ornamented with four statuettes at the foot, sustaining a dragon-scale dome, and it is provided with two goblets fastened by a chain. This is the type for isolated fountains in squares and avenues. The other type designed for attachment to walls is of oval form and less ornamental.

— THE spread of the Potato disease is unfortunately becoming general. Concerning the crop in Lincolnshire, Mr. John Algernon Clarke says:—"Around Long Sutton I found that already three-fourths of the tubers (by weight) are diseased. The testimony of many is that scarcely any sound Potatoes can be discovered, and the general anxiety is to know, not what may be the probable amount of 'ware' for market, but whether produce enough will be forthcoming as 'seed' for next year. The same condition of the crop prevails over the entire tract of Potato country between Boston and Wisbeach, where the yield will be doubtless little more than a return of the seed planted. If the saleable produce of the entire Potato crop of the British Isles is all but destroyed, the loss means something like 1,630,000 acres (besides gardens) at, say, $4\frac{1}{2}$ tons per acre, amounting to 7,335,000 tons, which, at £4 per ton, comes to £29,340,000." Let us hope, however, that the result may not be quite so disastrous as that the entire crop should be lost.

THE HOUSEHOLD.

MODES OF COOKING COMMON MUSHROOMS.

THE peasants of a great portion of Europe eat mushrooms raw, with salt and dry bread, and wholesome and good they are. The true flavour of mushrooms, nevertheless, is greatly heightened by cooking; and cook them how you may—a broil, a stew, or a fry, with the simple addition of butter, salt, and pepper, and they are excellent. There is one rule that should always be observed in whatever mode they are cooked, and that is that they should be served up quickly and hot. The following modes of cooking mushrooms may prove useful at this season of the year:—

TO STEW MUSHROOMS.—Trim and rub clean half a pint of large button mushrooms; put into a stew-pan two ounces of butter, shake it over the fire till thoroughly melted; put in the mushrooms, a teaspoonful of salt, half as much pepper, and a small piece of mace pounded; stew till the mushrooms are tender, then serve them on a hot dish. They are usually sent in as a breakfast dish, thus prepared in butter.

MUSHROOMS À LA CRÈME.—Trim and rub half a pint of button mushrooms, dissolve two ounces of butter rolled in flour in a stew-pan; then put in the mushrooms, a bunch of parsley, a teaspoonful of salt, half a teaspoonful each of white pepper and of powdered sugar, shake the pan round for ten minutes, then beat up the yolks of two eggs, with two table-spoonfuls of cream, and add by degrees to the mushrooms; in two or three minutes you can serve them in the sauce.

MUSHROOMS ON TOAST.—Put a pint of mushrooms into a stew-pan, with two ounces of butter rolled in flour; add a teaspoonful of salt, half a teaspoonful of white pepper, a blade of mace powdered, and half a teaspoonful of grated lemon; stew till the butter is all absorbed, then add as much white *roux* as will moisten the mushrooms; fry a slice of bread in butter, to fit the dish, and as soon as the mushrooms are tender serve them on the toast.

CURRIED MUSHROOMS.—Peel and remove the stems from a dish of full-grown mushrooms, sprinkle with salt, and add a very little butter; stew them gently in a little good gravy or stock. Add four table-spoonfuls of cream, and one teaspoonful of curry powder, previously well mixed with two teaspoonfuls of wheat flour; mix carefully, and serve on a hot dish, with hot toast and hot plates attendaut. Mind the "curry stuff" is good, says an Indian friend, and not too much of it. The word "curry," by itself, it seems, being merely the Tamil word for "meat." The large horse mushroom, when half or three parts grown, and curried in this fashion, will be found to be delicious.

TO POT MUSHROOMS.—The small open mushrooms suit best for potting. Trim and rub them; put into a stew-pan a quart of mushrooms, three ounces of butter, two teaspoonfuls of salt, and half a teaspoonful of Cayenne and mace mixed, and stew for ten or fifteen minutes, or till the mushrooms are tender; take them carefully out and drain them perfectly on a sloping dish, and when cold press them into small pots, and pour clarified butter over them, in which state they will keep for a week or two. If required to be longer preserved, put writing paper over the butter, and over that melted suet, which will effectually preserve them for many weeks, if kept in a dry, cool place.

TO PICKLE MUSHROOMS.—Select a number of small, sound, pasture mushrooms as nearly as possible alike in size; throw them for a few minutes into cold water; then drain them; cut off the stalks, and gently rub off the outer skin with a moist flannel dipped in salt; then boil the vinegar, adding to each quart two ounces of salt, half a nutmeg sliced, a drachm of mace, and an ounce of white pepper-corns; put the mushrooms into the vinegar for ten minutes over the fire; then pour the whole into small jars, taking care that the spices are equally divided; let them stand a day, then cover them.

ANOTHER METHOD.—In pickling mushrooms, take the buttons only, and while they are quite close, cut the stem off even with the gills, and rub them quite clean. Lay them in salt and water for forty-eight hours, and then add pepper, and vinegar in which black pepper and a little mace have been boiled.

The vinegar must be applied cold. So pickled they will keep for years.

MUSHROOMS EN RAGOÛT.—Put into a stew-pan a little stock, a small quantity of vinegar, parsley, and green onions chopped up, salt, and spices. When this is about to boil, the mushrooms being cleaned, put them in. When done, remove them from the fire, and thicken with yolks of eggs.

MUSHROOMS AND TOAST.—Peel the mushrooms, and take out the stems. Fry them over a quick fire. When the butter is melted take off the pan. Squeeze the juice of a lemon into it. Let the mushrooms fry again for some minutes. Add salt, pepper, spices, and a spoonful of water, in which a clove of garlic, having been cut into pieces, has soaked for half an hour; let it stew. When the mushrooms are done make a thickening of yolks of eggs. Pour the mushrooms on bread fried in butter, and laid in the dish ready for them.

MUSHROOMS EN CAISSE.—Peel the mushrooms lightly, and cut them into pieces. Put them into cases of buttered paper, with a bit of butter, parsley, green onions, and shalots chopped up, salt and pepper. Dress them on the gridiron over a gentle fire, and serve in the cases.

MUSHROOMS À LA PROVENCALE.—Take mushrooms of good size. Remove the stems, and soak them in olive oil. Cut up the stems with a clove of garlic and some parsley. Add meat of sausages, and two yolks of eggs to unite them. Dish the mushrooms, and garnish them with the forcemeat. Sprinkle them with fine oil, and dress them in an oven, or in a *four de campagne*.

BAKED MUSHROOMS.—Peel the tops of twenty mushrooms; cut off a portion of the stalks, and wipe them carefully with a piece of flannel dipped in salt. Lay the mushrooms in a tin dish, put a small piece of butter on the top of each, and season them with pepper and salt. Set the dish in the oven, and bake them from twenty minutes to half an hour. When done, arrange them high in the centre of a very hot dish, pour the sauce round them, and serve quickly, and as hot as you possibly can.

MUSHROOMS AU GRATIN.—Take twelve large mushrooms about two inches in diameter, pare the stalks, wash, and drain the mushrooms on a cloth; cut off and chop the stalks. Put in a quart stew-pan an ounce of butter and half an ounce of flour stir over the fire for two minutes; then add one pint of broth; stir till reduced to half the quantity. Drain the chopped stalks of the mushrooms thoroughly in a cloth; put them in the sauce with three table-spoonfuls of chopped and washed parsley, one table-spoonful of chopped and washed shalot, two pinches of salt, a small pinch of pepper; reduce on a brisk fire for eight minutes, put two table-spoonfuls of oil in a *sauté* pan; set the mushrooms in, the hollow part upwards; fill them with the fine herbs, and sprinkle over them lightly a table-spoonful of raspings; put in a brisk oven for ten minutes, and serve.

MUSHROOM SOUP.—Take a good quantity of mushrooms, cut off the earthy end, and pick and wash them. Stew them with some butter, pepper, and salt in a little good stock till tender; take them out, and chop them up quite small; prepare a good stock as for any other soup, and add it to the mushrooms and the liquor they have been stewed in. Boil all together, and serve. If white soup be desired, use the white button mushrooms and a good veal stock, adding a spoonful of cream or a little milk, as the colour may require.

BREAKFAST MUSHROOMS.—Clean a dozen or so of medium-sized, place two or three ounces of nice clean beef-dripping in the frying pan, and with it a table-spoonful or more of nice beef gravy. Set the pan on a gentle fire, and as the dripping melts place in the mushrooms, adding salt and pepper to taste. In a few minutes they will be cooked, and being soaked in the gravy and served upon a hot plate, will form a capital dish. In the absence of gravy, a *souppçon* of "extractum carnis" may be substituted.

MUSHROOMS WITH BACON.—Take some full-grown mushrooms, and having cleaned them, procure a few rashers of nice streaky bacon, and fry it in the usual manner. When nearly done, add a dozen or so of mushrooms, and fry them

slowly until they are cooked. In this process they will absorb all the fat of the bacon, and with the addition of a little salt and pepper, will form a most appetising breakfast relish.

MUSHROOM STEMS, if young and fresh, make a capital dish when the supply of mushrooms is limited. Rub them quite clean, and after washing them in salt and water, slice them to the thickness of a shilling, then place them in a saucepan with sufficient milk to stew them tender; throw in a piece of butter and some flour for thickening, and salt and pepper to taste. Serve upon a toast of bread, in a hot dish, and add sippets of toasted bread. This makes a light and very delicate supper dish, and is not bad sauce to a boiled fowl.

Lemon Peel.—Many persons may not be aware that the scent and flavour which constitute the use and value of lemon peel reside in minute cells, close to the surface of the fruit, and that by slicing it thin they will cut through these innumerable cells, and thus obtain double the quantity of the essential oil that could be procured by any one careless or ignorant of this circumstance. The cells being cut through, it necessarily follows that a great part of the oil remains on the white of the lemon. This is easily abstracted by means of rubbing a lump of sugar over it. The process of rubbing the *unwounded* peel is a tedious process, which may be facilitated by the thin cuttings above named. A slice of peel cut into the white is of little use, as the cells, being entire, retain the oil.

Macedoine des Fruits.—Take whatever fruit is at hand of the softer kinds—Currants (red, white, and black), Strawberries, Raspberries, Cherries, Grapes, whichever are in season, and in as great variety as possible, for it is the mixture of flavours that, as in the case of the salad, makes the *macedoine*; strip and pick it all carefully, and mix it together in a salad bowl or any other deep vessel, strew over the whole finely powdered loaf sugar, and over this a very small quantity of claret, sherry, or even water. This must be done an hour or two before the *macedoine* is to be eaten; give the fruit a careful stir so as to disseminate the syrup equally over all, and the lover of fruit will find a new enjoyment; the syrup will have crept into every corner of the luscious flesh. Eaten alone the *macedoine* is a delicious dessert; with a fresh roll it makes a capital *entremét*. Small stone fruit, such as greengages, apricots, and peaches, may be added to a *macedoine*, being first halved and the stones taken out.

Blackberry Wine.—The following is an American recipe for making blackberry wine: Crush the berries with a wooden pestle in a wooden tub or bucket; draw off all the juice, and add to it an equal quantity of water and two pounds of refined sugar for each gallon of the mixture. Keep in jars till fermentation is complete, and then bottle and cork it up. A second fermentation will take place in the ensuing spring, during which another pound of sugar should be added to each gallon. The wine thus prepared will keep well, and improve with age.

HARDY PLANTS IN FLOWER ROUND LONDON.

(FROM AUGUST 15TH TO AUGUST 21ST, INCLUSIVE.)

BY OUR OWN REPORTERS.

Achnatherum	Centranthus	Hydrocotyle	Passiflora
Calamagrostis	macrosiphon	bonariensis	racemosa
Adenophora	Chelone	Hydrangea	Pezomum
stylosa	obliqua	hortensis	Hammala
Allium	Chrysocoma	japonica	Penstemon
declinatum	latifolia	Hypericum	campanulatus
Amaryllis	Cirena	zygoticum	cordifolius
Belladonna	alpina	oblongifolium	Polygonum
Aralia	Clematis	Iberis	cuspidatum
nudicaulis	tabulosa	linifolia	viviparum
Arctotis	Coreopsis	Lavatera	Potentilla
breviscapa	longipes	mauritanica	dahurica
Artemisia	triplex	Linnaea	Pycnanthemum
rupestris	Cornus	borealis	linifolium
Aster	albus	Linum	Salpiglossis
casubicus	Epilobium	maritimum	sinuata
obliquus	Hallerii	Lobelia	Sedum
Richardsonii	Eragrostis	cardinalis	dentatum
Atriplex	Purshii	Melica	Selschianum
hortensis	Eupatorium	altissima	stenopetalum
Bromus	verticillatum	ciliata	Solidago
pendulinus	Francoa	Ophiopogon	Riddellii
Calamitha	rupestris	japonicus	Thalictrum
glabella	Galatella	Origanum	microphyllum
grandiflora	discoidea	sipyleum	Tricyrtis
Callirhoe	Glycyrrhiza	Oxalis	pilosa
involverata	fetida	purpurata	Valeriana
Campanula	Hebenstreitia	Paronychia	officinalis
floribunda	linifolia	serpyllifolia	

Plants in this list are almost without exception such as have come into bloom during the past week.

THE FLOWER GARDEN.

THE HERBACEOUS SPIRÆAS.

THIS extensive genus includes several species characterised by the beauty of their foliage and the airy grace of their flowers. Of the larger herbaceous kinds, none perhaps is more striking than *S. Aruncus* (Goat's-beard), a vigorous perennial which grows from three to five feet high and flowers in summer, producing its numerous small white flowers in long spikes forming a terminal panicle. The leaves are tripinnate, the leaflets being in three or four pairs, oblong, acute, serrated, about two inches long and one inch broad, with a terminal one of ovate shape and usually larger than the others. It is found in various parts of Europe, Asia, and America, and is a valuable subject for grouping with other fine-foliaged herbaceous plants, thriving in ordinary soil, and easily multiplied by division of the tufts.

A rather common but very pleasing British species is *S. Filipendula* (Dropwort), which grows from one to two feet



Spiraea Aruncus.

high, and has yellowish-white flowers (often tipped with red) in loose terminal corymbs. The leaves of this plant are mostly radical, or on the lower part of the stem, and are pinnate, with oblong-linear deeply-toothed segments. When the flower-stems are pinched off, it forms a very effective edging-plant, the fern-like aspect of its foliage rendering it very distinct from many other plants which are used for this purpose. The double variety *S. Filipendula* fl. pl. will be found useful in the mixed border. It thrives in ordinary soil, and is multiplied by division of the tufts.

Perhaps the handsomest of the hardy *Spiræas* is the American species known as *S. venusta*. It grows from one and a half to three feet high, and has deep rosy-carmine flowers in large terminal compound cymes. The leaves are pinnate, with palmate-lobed leaflets, the lobes of which are pointed and irre-

gularly toothed. It does best in sandy loam, and is valuable for the mixed border or for planting on the margins of shrubberies, or in beds among groups of the finer perennials.

Another new and handsome kind, somewhat resembling the last-named, but dwarfier, is the Japanese species *S. palmata*, which grows from one and a half to two feet high, and has crimson flowers in a many-branched terminal panicle. The leaves are palmate in shape, with from five to seven smooth, veined, reticulated lobes. Suited for the same positions and soil as the last-named kind.

The common British Meadow-sweet (*S. Ulmaria*) would, no doubt, be considered a plant of high merit were it only an exotic. It is seldom seen in gardens, but there are often worse things to be found in our borders. As it is too well known to need any description here, we shall merely say that it deserves a place, if only for the sake of variety, in the mixed border, on the margins of shrubberies, or in the rougher parts of pleasure-grounds, where it may be advantageously planted with other subjects which do not require much looking after. Almost any soil will suit it; if moist, so much the better.

MR. PEARSON'S GERANIUMS.

BY QUINTIN READ, PLEASLEY, MANSFIELD.

It is well known that for many years Mr. Pearson, of Chilwell, has devoted unremitting attention to the raising of new Geraniums, and that neither money, nor labour, nor house room has been spared to accomplish his purpose. As an instance of the pains taken to enable him to arrive at a just estimate of their merits, I may mention that on his lawn, near his residence, I saw the other day no fewer than seventy circular beds, each planted with one separate sort in sufficient quantity to give a good mass of colour, and to test their adaptability for the flower garden. Besides these some four thousand seedlings have been planted out in his trial grounds, the result of crosses made by Mr. Pearson's own hands. A house one hundred feet long is also filled with such a glowing mass of dazzling beauty that I am afraid to attempt a description of it. All of us know how effective conservatories are during the Azalea and Camellia season, but even when at their best they could not surpass in brilliancy the rich varied tints of this house of Geraniums. Let us take them in separate colours, and in the first place we will begin with pinks.

In this class *Amaranth* possesses perhaps the deepest shade of blue of any Geranium yet in cultivation. It is a good bedding variety of the style and habit of *Christine*, with plain leaves, the truss compact, with a deep blue-tinted rose colour; altogether an excellent variety. *Rose Bradwardine* is also a valuable variety, which produces a profusion of lovely rosy pink flowers; its habit is compact and its trusses of bloom are very large. *Rose Peach* is a deep glowing pink, dwarf in habit, and highly attractive, altogether a most interesting variety. *Lady Louisa Egerton* is a bold pale pink with a light centre, truss very large, and the individual flowers also bold and conspicuous, habit good. *Mrs. Lowe* is another beautiful kind with a dwarf habit; it is half a *Nosegay*, and has a wonderfully fine truss; it will prove a valuable bedding variety, owing to its compact habit of growth, and the profusion of rich flowers which it produces. A bed of it in the trial grounds proved its adaptability for flower garden purposes. *Florence Durand* is a rosy pink with a deep shade of purple; we have it in bloom in our conservatory, and it stands pre-eminent as an indoor plant; its great substance of petal and freedom of bloom make it also equally good for outdoor embellishment. *Mrs. F. Burnaby*, a kind with a pretty shade of pink, produces fine large trusses, and flowers perfect in form and shape; it has a good compact habit, and is a most effective pot plant. *Amy Robsart*, dark pink, merging into the softest rose, has a fine habit and truss. The Hon. Mrs. Eden is a gem in its way. It is a half *Nosegay* with plain leaves and pink flowers shaded with violet; in habit it is dwarf and compact; a first-class bedding variety. These include most of the pinks already sent out.

Among scarlets the most useful both for conservatories and for the embellishment of the flower garden, is *Corsair*. It is a rich scarlet, of perfect form, and so prolific in bloom, so fine in habit, substance, and truss, and so wonderfully good in all

respects, that Lord Derby and all others of that class are completely put in the background. Mrs. Hetley is a fine bold scarlet with a very large truss, and succeeds well out-of-doors; it is certainly one of the best either for in or outdoor purposes. Chunder Sen belongs to the same class of bright fiery scarlets, though more dwarf in habit; I think it will be an acquisition for outdoor decoration. Lord Belper, dark scarlet shaded with crimson, has a very large truss, and is one of the best for bedding purposes. Miss Stubbs, Mrs. Sibray, and Miss Sanders are all fine dark crimson flowers, with hold trusses and good habit. Thomas Adams is a finely shaped flower, red, shaded with salmon; also Charles Burrows, which is much in the same way, only a deeper red. Col. Holden is a rich rosy crimson, of faultless shape, good in substance, truss, and habit. Rev. T. F. Fenn, Mary Flower, Smeaton, and Samuel Bennett, have rich deep crimson well-shaped flowers and large trusses. These are all desirable varieties. Mrs. Hole is also a useful introduction, with deep magenta flowers; in habit it resembles Violet Hill Nosegay. Then come three other varieties, viz., Mrs. Vincent Fenn, Red Dwarf, and Shakespeare. These are likely to prove the most useful of all others for bedding purposes; all of them have the habit and freedom of bloom of Violet Hill with a deeper dash of scarlet in their flowers, a circumstance which greatly enhances their beauty. Violet Hill, though one of the very best of all bedding Geraniums, looks pale by the side of the three last named sorts.

Among golden tricolors Mrs. Docksey is one of the brightest and most attractive I have ever seen; Lady Manvers is also good, the colours being bright and pure; even Mrs. Pollock growing near it looked inferior to it. Wm. Sandy is one of Mr. Pearson's best tricolors. I had it growing in a pit during the spring months mixed up with other sorts, and it was always picked out as the best tricolor we had, even by the uninitiated. There were others in this class, all superior kinds, such as Abram Bass, Miss Locker, and Monsieur Durand, but the above are considered to be the best.

In the silver variegated section Pearl is an old favourite; it has a broad pure white leaf margin, with dark zone, and the flowers, a pretty shade of pink, contrast beautifully with the foliage. While on the silver-edged section I may mention three gems which will not be sent out for want of stock for some time to come, viz., Mrs. Bishop, Mrs. Wm. Hollins, and Miss Minna Hollins. These are more perfect and free from fault than anything I have ever met with in their way, and there is such a sweetness and softness in the flowers, and such chasteness in the foliage, that both flowers and foliage contribute to set each other off to advantage; Mrs. Bishop has lilac pink flowers, and Miss Minna Hollins soft delicate pink.

I must now advert to a few zonales that will be sent out next season. Some of them were planted out in the trial grounds in a mass, so that there was every chance of testing them both for outdoor and for indoor purposes. Rosinia May is excellent in the open garden; a splendid shade of pink, with a fine bold truss. Contessa Quarto is bright and beautiful, with dark pink trusses of bloom. Mrs. Holden and Mrs. Miles are also very good, with fine pink flower trusses. Matilda appeared to be one of the best for conservatory decoration; it resembles a finely-grown Hydrangea, for I noticed on a small plant in a small pot seven or eight trusses of bloom of immense size. Mrs. A. Bass is darker than some in this section; but among this class of Geraniums Mrs. Musters is the finest and best. I was curious enough to measure one truss of this sort, and I found it nearly seven inches across. Mrs. Young and Miss Skipworth, however, are also without a fault, the trusses being fine and symmetrical, but not so large as those of Mrs. Musters.

These varieties of Geranium are all of sterling merit. I cannot close my remarks without adding that the pot Vines at Chilwell are in excellent health; in a large house of seedling Vines were several that promised to reward Mr. Pearson for his care and labour bestowed in that direction. The fruit trees in the orchard houses were a great success, and whether in pots or planted out they were loaded with fine fruit. I was delighted with the system of growing Figs in pots plunged in the open border; the trees are vigorous and healthy and covered with an abundance of large fine Figs. La Madeleine is among the best and earliest Figs in the collection.

HERBACEOUS PLANTS.

A SUGGESTION RESPECTING THEM.

TRIAL by jury is one of the most distinct features of our legal code. Without question it has merits of a very high order, and, in comparison with the single judge system, its findings are, in a large majority of instances, much more satisfactory. Indeed, in a plain case, with twelve good men and true, their finding is as near perfection as it is possible to get it. Aware of this fact, editors of horticultural papers, instead of pronouncing "judgmentally" on every occasion on which their advice is asked, have, for some time, pressed the good old English jury system into the service, and now, if you ask them to hand you the names of the best twelve Pears, six Cabbages, three Onions, twelve Peaches, three Cucumbers, or whatever it may be, you do not get the usual editorial dictum, but you get the result of the last jury trial, when some twenty of the best gardeners in the country gave their practical opinion on the several merits of the various fruits and vegetables grown in our gardens. Now, my suggestion is, could not you shift the jury (or empanel a new one) on to the herbaceous department, and get their candid and well-weighed opinion as to the best flowering one hundred, fifty, or twelve sorts for the border; then the same in regard to foliage plants; then say the best fifty, twelve, or six for exhibition; then you might put the hardy shrubs, both flowering and foliage kinds, in the "dock;" and, if time permitted, even the stove and greenhouse plants might also be overtaken. To ensure accuracy, nurserymen and gardeners might both give their awards, which might be separately published. The above would be sure to clear away much of the mist that at present hangs over the best in these sections, particularly the herbaceous, and would certainly be an admirable guide for amateurs and others who desire to buy, and nurserymen who require to propagate such things. It would also save the former much more than useless expense in acquiring, and the latter in propagating, the mass of rubbishy plants that constantly obscure the merits of the section, and the many most truly deserving subjects to be found in it. I therefore trust you will give effect to the suggestion which I have just made.

W. W.

[We shall be very glad to do so, and, now that most kinds of herbaceous plants are in full beauty, hope to receive from different quarters lists of such kinds as are found to give the greatest satisfaction, both in point of ornamental effect and duration of bloom.]

GLADIOLI.

ENGLISH *v.* FRENCH SEEDLINGS.

At the Devon and Exeter Flower Show, which took place the other day, Messrs. Kelway & Sons, of Langport, exhibited a stand of seedling Gladioli, which surpassed anything I have ever seen. Near them were some continental seedlings of the same flower, which could not be compared with those of Messrs. Kelway. Knowing how many growers think that no English seedlings are to be compared with those we receive from abroad, I think it may interest some of your readers to know that this is not always so. I subjoin a list of the seedlings exhibited by Messrs. Kelway, naming those to which first-class certificates were awarded.

* Batavus—crimson and marone, violet stripe on lower divisions.

Larina—purple crimson, large white blotch on each petal.

Rosea alba—white, with rose blotches.

* Maria—pure white, lilac blotch on lower divisions.

Yellow King—pale yellow, flaked with lake.

* Ustica—white flaked lilac.

* Adrius—scarlet crimson flaked marone.

* Artacia—salmon rose flaked crimson.

Garnet—rose flaked purple.

Adela—white yellow, with violet stripe on lower divisions.

Those marked with an asterisk (*) are those to which first-class certificates were awarded. JOHN B. M. CAMM.

[The following are the names of the thirty-six sorts with which Messrs. Kelway won the silver cup as first prize at Dublin last week:—

* Ate—crimson flaked marone, large white centre.

Antigone—tender rose, largely flushed with carminate red.

Distinction—orange rose flaked carmine, purple centre.

Sesia—white flaked rose, yellow centre.

Eva—pale lilac flaked purple, large purple centre.

Abula—rosy red, white centre, purple on lower divisions.

Homerus—white, lilac centre.

Miss Warren—cerise white throat, violet on lower divisions.

Battus—light rose, lilac on lower divisions.

Rossini—dark amaranth red, livid, and stained with white.

A. Brongniart—rose ground, slightly tinged with orange, flushed with red, large white stain.

Amelia—lilac purple, large ivory centre.

Augens—cerise flaked lake, large ivory centre.
 Horsa—dark salmon veined marone, purple on lower divisions.
 *Ball of Fire—brilliant scarlet, black on lower divisions.
 Ababa—cerise, large white centre.
 Orphe—rose, flushed with carmine, fine stain of carminate purple on lower divisions.
 Albia—salmon flamed carmine, purple on lower divisions.
 Amor—large cerise, white centre, veined purple.
 *Egyptian King—marone flaked crimson, white centre, violet stripe.
 Alice—white, yellow centre, violet striped.
 Brutus—mauve, flaked purple, orange centre.
 Melud—salmon, purple on lower divisions.
 Mrs. Reynolds—white, flaked lilac.
 Veronica—white, tinged lilac, violet on lower divisions.
 Rutuba—red, blue centre.
 Hesperia—orange scarlet, lilac on lower divisions.
 Ophelia—red, flaked carmine, violet centre.
 Cleonica—plum, flaked purple, yellow on lower divisions.
 Herbert—scarlet, white centre.
 Accua—white, flaked purple, violet striped.
 Leonica—dark crimson, violet striped.
 Baltia—cerise, flaked scarlet, orange centre.
 Tetrica—salmon rose, purple on lower divisions.
 Shakespeare—white, slightly flushed with carminate rose.
 Peronia—fine rose, carmine on lower divisions.
 In the class of twenty-four sorts the first prize was awarded to the following :—
 Candia—blush flaked carmine, yellow centre.
 Velia—mauve, white centre, white line on each petal.
 Abazea—crimson flaked black, large ivory centre.
 Madame Desportes, pure white, slightly striped with violet on lower divisions.
 Mr. Glasecock—lilac flaked purple, lilac on lower divisions.
 Batavus—carmine flaked marone, violet stripe on lower divisions.
 Uramia—pure white, largely flushed with carminate bright rose.
 Hortensia—rose veined purple on lower divisions.
 *Beauty of England—pure white, yellow blotch on lower divisions.
 Clupea—white, lightly flaked rose.
 Voluba—ivory-white, orange centre, flaked purple.
 Adolphe Brongniart—rose ground, slightly tinged with orange, flushed with red, large white stain.
 Cillaha—flesh, feathered red, purple on lower divisions.
 Madame de Vetry—white, slightly sulphurish, stained with purplish carmine.
 Orphe—rose, flushed with carmine, fine stain of carminate purple on lower divisions.
 Olbia—purple rose, white blotch on lower divisions, violet throat.
 Ustica—white, slightly flaked lilac, striped with rose on lower divisions.
 Herbita—scarlet, large yellow centre, carmine stripe.
 Corduba—white, purple on lower divisions.
 Le Gouver—bright red, white line in the centre of superior divisions, white spots on the lower divisions.
 Julia—pink, flaked rosy crimson, purple throat.
 Abrota—white, lilac on lower divisions.
 Ancyra—sulphur.
 Parsonii—flesh, flaked red, purple centre.
 To the following twelve a first prize was also awarded at the same exhibition :—
 Prince Arthur—white, flaked lilac purple, large carmine centre.
 Tribune—lilac rose, purple on lower divisions, flaked red.
 A. Brongniart—rose ground, slightly tinged with orange, flushed with red, large white stain.
 Anaphi—white flamed rose, lilac on lower divisions.
 Hecuba—crimson, violet centre.
 Sophia—light plum, flaked purple on lower divisions.
 Orphe—rose flushed with carmine, fine stains of carminate purple on lower divisions.
 Rossini—dark amaranth red, lined and stained with white.
 *Miss Phillis Stuckey—salmon flaked carmine, light centre.
 Elisa—salmon rose, purple on lower divisions.
 Shakespeare—white, slightly flushed with carminate rose.
 Brennus—crimson flaked marone, white centre, purple stripe.

Ugly Examples of Bedding Out.—A friend of ours is collecting illustrations of bad examples of bedding, and will be glad to receive any sketch or plan, no matter how rudely coloured, showing hideous designs. He proposes publishing a small illustrated work on the subject.

Dahlia coccinea.—Two years ago Sir Charles Isham gave me a root of this very beautiful tuberous perennial. It was a dwarf mass of brilliant scarlet bloom all last summer, and one of the gems of the garden. I grieve to say that my tubers all rotted last winter. Sir C. Isham has also, he tells me, lost it. Can any one replace my loss? for it is one I feel much.—H. H. CREWE, *The Rectory, Drayton-Beauchamp, Tring.*

Orisia coccinea.—At Messrs. Rollissons, at Tooting, this fine plant is found to luxuriate under the treatment given to ordinary alpine plants; plants of it stood outdoors the whole of last winter plunged in sand, and this season they have grown and flowered as well as those that were wintered in a cold frame. The soil used for them is about two-thirds mellow loam, the remaining portion being well decomposed leaf mould and some sharp sand. I have not noticed this plant at any other of our London nurseries; will any of your readers favour me with their experience in regard to its culture, and also as to its hardiness?—ALPHA.

THE FRUIT GARDEN.

THE NORTH AMERICAN VINES.

BY CHARLES V. RILEY, ENTOMOLOGIST TO STATE OF MISSOURI.

In few genera of plants is it more necessary to accumulate abundant material in order to arrive at correct classification than in the genus *Vitis*. The species are with difficulty defined, as they vary in a marked manner in different sections of the country, and the foliage of the same individual vine often varies greatly at different ages and seasons. Preserved leaves are not alone to be trusted to therefore, but every stage of growth must be considered, from the wood to the different leaves, the blossom, bunch, berry, and even the seed, which, in its shape, and especially in the development of its raphe (or cord) furnishes, according to Dr. Engelmann, some of the most permanent distinguishing traits between the species.

It is interesting to know that not a single real species has been added to those belonging to the old territory of the United States, east of the Mississippi river, since the time of Linnaeus and Michaux; though Rafinesque, Le Conte, and perhaps others, have attempted to distinguish a great many more.

The number of Grape vines bearing edible fruit, now considered species by the best botanists, in the territory of the United States is limited to nine. They may be tabulated as follows :—

I. Vines which are of practical importance, as having yielded our different cultivated varieties :—

1. *Vitis Labrusca*, Linn. Northern Fox.
2. „ *estivalis*, Michx. Summer Grape.
3. „ *riparia*, Michx. River Bank Grape.
4. „ *vulpina*, Linn. Southern Fox, or Muscadine.

II. Vines of less importance, and which have thus far given no cultivated varieties :—

5. *Vitis cordifolia*, Michx. Winter, or Frost Grape.
6. „ *Californica*, Benth. Confined to California.
7. „ *Arizonica*, Engelm. Similar to the last.
8. „ *caudicans*, Engelm. Mustang Grape of Texas.
9. „ *rupestris*, Scheele. Bush Grape or Sand Grape.

Of these nine species, only four grow wild in our own State, viz., *estivalis*, *cordifolia*, *riparia*, and *rupestris*.

In stating last year that our cultivated varieties had been referred to four species, including *cordifolia*, and omitting *riparia*, I followed the later editions of "Gray's Manual," in which the latter is considered as a variety of the former. The reasons for adopting a different course will be found in the following synopsis, which has been kindly prepared for me by the author :—

THE TRUE GRAPE VINES OF THE OLD UNITED STATES.

BY DR. GEORGE ENGELMANN, OF ST. LOUIS.

I. Grape-vines with loose bark (at last separating in shreds), climbing by the aid of branched tendrils, or (in No. 4) scarcely climbing at all.

a. Berries small, 3 to 6 or rarely 7 lines in diameter; seeds obtuse, with the raphe (or cord) more or less prominent (except in No. 4) over the top. All the species of this group, just like the European Grape-vine, exhibit, on well-grown shoots, a regular alternation of two leaves, each having a tendril (or its equivalent, an inflorescence) opposite them, and a third leaf without such a tendril.

1. *Vitis cordifolia*, Michaux.—Usually tall, climbing high, trunks not rarely 6 to 9 inches in diameter. Leaves middle-sized, heart-shaped, mostly entire or rarely slightly trilobed, with shallow broad teeth, usually smooth and shining on both sides, the young ones sometimes slightly downy below; berries among the smallest, in large bunches, black without a bloom, maturing late in the fall, usually with only one short and broad seed marked by a prominent raphe. This is a common plant, especially in the river bottoms, and is known under the name of Winter Grape, Frost Grape, or Chicken Grape. It is found from New England to Texas, and westward to the western limits of the wooded part of the Mississippi valley. In this valley at least, the fruit has a strongly and even fetidly aromatic taste. No cultivated varieties of the species are known.

2. *Vitis riparia*, Michaux.—Mostly a smaller plant than the last, but with larger and more or less cut-lobed glabrous shining (or rarely, when young, slightly downy) leaves, the lobes long and pointed; the teeth also more pointed than in *cordifolia*; berries as small as, or usually larger than in the last, mostly with a bloom, in smaller bunches, mostly one or two seeded; seeds with a less prominent raphe. This prefers thickets or rocky soil on river banks, and extends as far west and south as the last, and much farther north, being the only Grape-vine in Lower Canada, where it is found even sixty miles north of Quebec. The northern form, in Canada, Northern New York to Michigan, and Nebraska, has fewer and larger berries in a bunch, and is easily distinguished from *V. cordifolia*

The south-western form, however, approaches more closely to this last species, with which Professor Gray, in the later editions of his "Manual," has united it. The fruit ripens earlier than that of *cordifolia*, and is much pleasanter. In St. Louis a variety found on the rocky river banks is brought to market in July. A number of cultivated varieties are referable to this species, among which the Taylor Bult, the Delaware, and the Clinton are the most prominent.

3. *Vitis æstivalis*, Michaux.—Smaller than the first, climbing over bushes and smaller trees; leaves large, of firmer texture than the preceding ones, entire, or often more or less deeply and obtusely 3 to 5 lobed, with short and shallow broad teeth, when young always very woolly, mostly bright red or rusty, at last smoothish, but dull, and never shining like the preceding ones; berries usually larger than in both the others, and, when well grown, in compact bunches, coated with a distinct bloom; seeds usually two or three, with a very prominent raphe. This is the summer grape common throughout the middle and southern States, usually found on uplands and in dry open woods or thickets, maturing its fruit in September. It is the most variable of our grape-vines, and hence has seduced superficial observers into the establishment of numerous nominal species. A form with large leaves which retain their rusty down at full maturity has often been mistaken for *Labrusca*, which does not grow in our State. Another form, more bushy than climbing, with deeply lobed rusty-downy leaves and very sweet fruit, is *Vitis Liucecumii* of the sandy soil of Louisiana and Texas. This species assumes a peculiar form approaching *V. cordifolia* through its smaller black berries without bloom and in larger bunches, when it gets into shady woods with rich soil. Another form with ashy-white, downy, scarcely lobed leaves, and fruit like the last mentioned, which grows in our bottoms, often climbing high trees, or growing over bushes on the banks of lakes, I have distinguished by the name of *cinerea*. It is not always easy to distinguish such forms from the other species, and perhaps less so to unite them under the single species *æstivalis*, unless the essential characters above enumerated be closely attended to, and the numberless gradual transitions from one form into the other be watched. We cultivate many varieties of this valuable species, the most important of which are the Virginia Seedling, the Cynthiana, and the Herbmont.

4. *Vitis rupestris*, Scheele.—A small bushy plant, often without any tendrils, rarely somewhat climbing; leaves small (2 to 3 inches wide) mostly broader than long, heart-shaped, scarcely ever slightly lobed, with broad coarse teeth, and usually an abruptly elongated point, glabrous, and of a rather light green colour; berries middle-sized, in very small bunches; seeds mostly 3 to 4, obtuse, with a very delicate raphe. This Grape-vine is found only west of the Mississippi, from the Missouri river to Texas, and westward probably to New Mexico. In our State, where it is called Sand Grape, and in Arkansas, it grows on the gravelly banks and over-flowed bars of mountain streams; in Texas also, on rocky plains, whence the Latin name; it is there also known under the name of Sngar Grape. Its luscious fruit ripens with us in August. It is nowhere yet in cultivation, but may in future prove of value.

b. Berries large, 7 to 9, or even 10 lines in diameter; raphe scarcely visible on the more or less deeply notched top of the seed. These plants, on well-grown shoots, bear a tendril opposite each leaf, with only rare and irregular intermissions.

5. *Vitis Labrusca*, Linnæus.—Plants usually not large, climbing over bushes or small trees, though occasionally reaching the tops of the highest trees, with large (4 to 6 inches wide) and thick, entire or sometimes deeply lobed, very slightly dentate leaves, coated, when young, with a thick rusty, or sometimes whitish, wool or down, which, in the wild plant, remains on the lower side, but almost disappears in the mature leaf of some cultivated varieties; berries large, in rather small or middle-sized bunches, bearing two or three, or sometimes, four seeds. Known as the Fox-grape or Northern Fox-grape, it is a native of the eastern slope of the continent from New England to South Carolina, where it prefers wet thickets; it extends into the Alleghany Mountains, and here and there even down their western declivity, but is a stranger to the Mississippi Valley. The most important varieties of this Grape-vine now cultivated in our country (such as the Catawba, Concord, Isabella, Hartford Prolific, and dozens of others), are the offspring of this species; they are all easily recognised by the characters above given, and more readily by the peculiar arrangement of the tendrils as above described.

II. Grape-vines with a firmly adhering bark, which does not scale off; tendrils almost always simple; berries very large (7 to 10 lines in diameter), very few in a bunch; seeds with transverse wrinkles or shallow grooves on both sides.

6. *Vitis vulpina*, Linnæus.—Bushy, or sometimes climbing high, with small (two or at most three inches wide) rounded, heart-shaped, firm and glossy dark-green leaves, smooth or rarely slightly hairy on the under side, with coarse, large or shallow teeth. This southern

species, known under the name of Southern Fox-grape, Bullace, or Bullet-grape, is found along water-courses, not further north than North Carolina and Arkansas, and may possibly straggle into south-eastern Missouri. Some of its cultivated varieties, especially the white Scupper-nong, are highly esteemed in the South but do not perfect fruit in the latitude of St. Louis.

I recognize only three other species of true grape-vine in the territories of the United States. The most remarkable of these is the Mustang grape of Texas, *Vitis candicans*, Engelm. (*V. Mustangensis*, Buckley), with rather large, rounded, almost toothless, rarely deeply-lobed leaves, white and woolly on the under side, bearing large berries, which in its native country are now beginning to be made into wine. *Vitis californica*, Benth., the only wild grape of California, has rounded downy leaves, and small berries, and is not made use of as far as known. *Vitis Arizonica*, Engelm., similar to the last, but glabrous, with middle-sized berries, reported to be of a luscious taste. None of these show a prominent raphe on the seed, so that this character is peculiar only to the first three species here enumerated.

OUR FRUIT CROPS.

Petworth House, Sussex.—Apricots here are a complete failure. Peaches and Nectarines are thin, and trees much injured by late frost. Apples are a very deficient crop. Pears, good, particularly on some young pyramidal trained trees. Plums, none on wall trees, standards thin, but we have a good crop of Damsons. Morello Cherries are a moderate crop, others a failure. Gooseberries have been a good crop. Currants, red and white, half a crop, fruit small; black, good, and the trees are clean and healthy. Raspberries have been a good crop. Strawberries, an average crop. Filberts and Cobnuts, partial; Walnuts, none.—T. JONES.

Wilton House, Salisbury, Wiltshire.—Apples are a complete failure, probably caused by the unripened state of the wood in the previous autumn, owing to the great quantity of rain which fell at that season and during the winter. Apricots, a very poor crop, even where protected by blinds. Cherries, a failure, except on walls, on which there was a partial crop. Currants, partial crop; in wet localities quite a failure. Figs, a poor crop. Gooseberries, a partial crop. Nuts, a fair crop. Peaches and Nectarines, none, only where well protected. Pears, quite a failure, except in elevated positions. Plums, very poor. Raspberries and Strawberries, good. Walnuts, none; young shoots killed back 3 or 4 feet.—T. CHALLIS.

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Western Triumph Blackberry.—This new kind is highly spoken of in America. It is very hardy, as good in quality as such older kinds as the Lawton or Wilson, and said to possess a peculiarly rich flavour. Will none of our growers of small fruit see what is the value of these Blackberries in our climate? In America, as we can testify, they are really valuable fruits, as far before the Blackberry known to us as the Ribston Pippin is before a common cider Apple.

How Wine is coloured.—The following pleasant news for wine connoisseurs is contained in a letter from Carlsruhe:—"Just as usual, several cartloads of bilberries are passing through our city en route for Wurtemberg, where they will undergo a process of pressing and be sold to the wine dealers for colouring wines, &c. Many a wine-drinker thinks while he quaffs his red wine, that its tint has been derived from the glowing sun of Bordeaux or the upper Rhine, whereas, in reality, it is indebted for it to the Pine forests of the 'Odenwald.'"

Our Fruit Crops.—I notice two curious peculiarities in reference to these viz.: the unusual quantity of Apples that fall off prematurely this season, and the early maturity of several sorts of fruits—Pears, Plums, Apples, and even the few Peaches that have been left on walls seem to ripen sooner than usual. As to the falling off of unripe fruit, most people would attribute it to spring frosts; but if so, why do not the Pears, which suffered as much or more, not fall off likewise? The premature ripeness is also singular, as upon the whole we have had but little sun.—D. T. FISHER.

Criminal Carelessness.—A gentleman's son was drowned the other day at Sandhurst, Berks, in his father's garden. The unfortunate boy was named Roderick Campbell Johnson, son of Mr. Alexander Robert Campbell Johnson, of Heatherley House, Sandhurst. The inquest was held at Heatherley House, where it transpired that the deceased, who was scarcely six years of age, was in the garden playing with the flowers, under the charge of the head nurse. There was a pond in the garden totally unprotected, and when the woman looked for the child, about one o'clock, to give him his dinner, she could not find him. Captain Palliser, R.N., who was staying at Heatherley House, also went in search of the lad, hearing he was missing. He went to the pond and found the child in it, and pulled it out to all appearance dead. The child was put in a warm bath, and efforts made to restore animation, but without avail.

GARDEN DESTROYERS.

LIPARIS SALICIS—THE SATIN MOTH.

THE passer-by who strolls along any of our country lanes within reach of willows or poplars in the months of July and August, especially if, like an entomologist, he disturbs the foliage of the trees and hedges, may now and then see something white dart out, flit away, and disappear again among the leaves. It is obviously a moth or butterfly, almost as large as the white cabbage butterfly, but he at once sees that it cannot be it. It is far too white, too snowy, too downy. The cabbage butterfly flutters about and lirts from spot to spot, not hurrying out of sight. No doubt its motions are inaudible to us, but they do not look so. They do not suggest the idea of stillness and silence; the insect of which we speak, and which is figured above, does. It reminds one by its purity, its softness, and its impalpable style of motion, of the fall of a flake of snow. The ghost moth is nearly as white, but it floats stationary in the air instead of imperceptibly thawing away out of sight amongst the leaves. Nothing that we have met with has so completely this effect as our present subject and one or two of its allies.

It is a moth called *Liparis salicis* (the Willow *Liparis* or

Satin moth, which latter colloquial name happily expresses its most prominent character). It is pure snowy white, without spot or speckle, and clothed with most delicate silky hair; the body is black, but being also covered with long silky white hairs, appears white like the wings. The antennæ alone form a contrast, for they have short black rays.

The caterpillar is hairy and gaily coloured. It has two black stripes spotted with red tubercles down the sides and along the middle of the back; between the stripes is a snow-white or citron-yellow space or series of spots. The sides are grey, with red tubercles. The hairs with which it is clothed are golden yellow.

The chrysalis is very hairy, and lies in a web spun on the trunks of trees or on the ground. The perfect insects appear in July or August, and sometimes are in such numbers as to mimic a snowstorm by the males flying from one tree to another. The female lays from one hundred and fifty to two hundred eggs in patches on the bark or leaves of the tree. These are not left bare, but are covered by a crust, like a patch of frozen spittle. The eggs are pale grey. The caterpillars are hatched in about a fortnight or three weeks. They do not go into the pupa state until the next year, passing the winter in crevices of the bark and under moss, &c. As is implied by its name, the caterpillar feeds on the leaves of the willow or poplar, although it may not absolutely confine itself to them. It is common in England, and generally throughout Europe, and trees may occasionally be seen presenting the melancholy aspect of winter in summer, being wholly deprived of their foliage by it; and young and weak trees are often killed by it. The caterpillars are very voracious, and clear off the whole leaf, leaving nothing but the stalk and mid-rib.

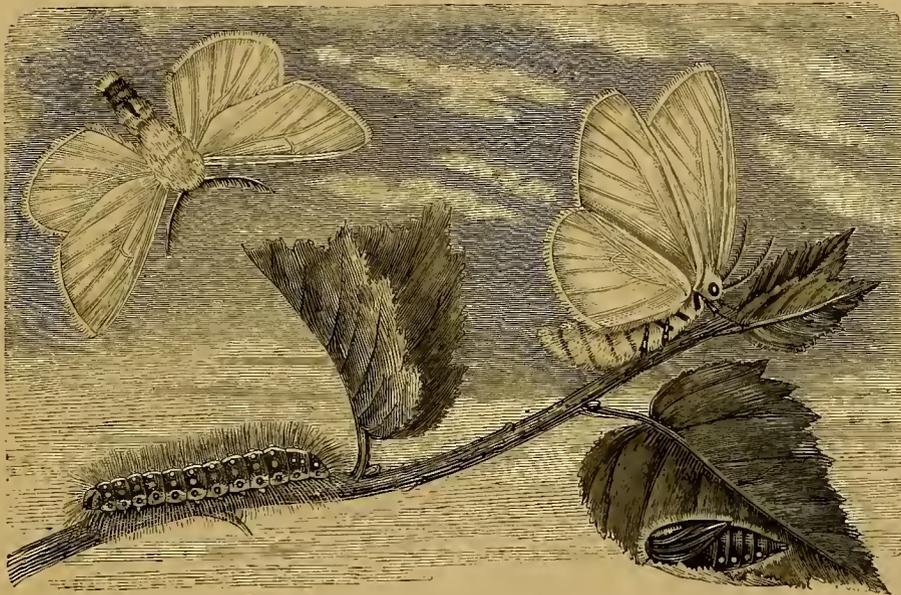
The best mode of dealing with this species is to attack it in

the egg stage. The hard glossy deposit of apparently frozen spittle which covers the eggs can be so easily detected by anyone who has once had it pointed out, and is so easily removed, that it is not difficult to destroy great numbers with small trouble. The patch of eggs is about the size of a shilling, or a little larger, and if it is on the bark, a slice of that part on which it rests can be cut off; if on a leaf the leaf can be pulled. Both sides of the leaves must be looked at, as it does not confine itself to one side. By this means a man may (according to Kollar) examine a whole avenue in one day and destroy many thousand eggs. The great thing, however, is to see that the eggs are really destroyed. If they are only thrown on the ground they might as well have been left alone; all the trouble of gathering them is thrown away.

The gravid female moths may also be sought for on the trunks of the trees in August. Their colour easily betrays them, and being heavy and disinclined for motion, they prefer to sit still on the bark, and are easily caught. Many of the hibernating caterpillars also may be destroyed during the winter by examining the trees they frequent. They are said not to be so much exposed to the attacks of parasites as other caterpillars, which, if true, may perhaps be due to their hair-

ness rendering it more difficult for the ichneumonous to deposit their eggs in them.

A. M.



The Satin Moth. (*Liparis salicis*.)

ness rendering it more difficult for the ichneumonous to deposit their eggs in them.

Economic Entomology.—We are informed that prizes for collections of economic entomology are offered for competition in 1873, and the following rules relating thereto have been issued by the Royal Horticultural Society:—£10 for a collection of British insects injurious to some one order of plant used for food—as Cruciferae, Leguminosae, or corn; the order may be selected by the competitor. £3 for a miscellaneous collection of British insects injurious to plants used as food. £5 for a collection of British beetles injurious to timber and fruit trees, either growing or felled. £2 for a collection of British insects injurious to some one timber or fruit tree. The insects to be exhibited in their various stages of development, accompanied by specimens, models, or drawings of the injuries caused by them. The collections to be sent in addressed to James Richards, Assistant Secretary, Royal Horticultural Society, South Kensington, S.W., on or before November 1st, 1873.

NOTES AND QUESTIONS ON GARDEN DESTROYERS.

To Destroy Ants.—Fill small phials two-thirds with water, and add sweet oil to float on the water to within half an inch of the top. Plunge these upright in the ground, leaving only half an inch standing out, near the nest or runs of the ants. The ants will come for a sip, and go home to die. No insect can exist with oil stopping up its spiracles or breathing pores.

To Destroy Black Beetles.—A certain remedy is to procure some bracken, *Pteris aquilina*, or common fern, plentiful on commons, and put it down about the house at night. The black beetles will eat it ravenously and soon die, and their relatives will pick their bones. It is commonly used in the north of England.—*English Mechanic*.

Caterpillars on Cabbages.—One of my friends, a landed proprietor in the Ardennes, informs me that, one day, having observed in the garden of a peasant that the cabbages were covered with froods of the common bracken (*Pteris aquilina*), he inquired the reason, and was told by the owner that it was a certain and easy way to get rid of the caterpillars. My friend made a trial of the remedy himself, and he assures me that in one hour after the bracken-froods were laid on, not a caterpillar was to be seen. Elder leaves are said to be equally efficacious.—E. M., "*Belgique Horticole*."

THE INDOOR GARDEN.

TRITONIA AUREA.

At present this is one of our prettiest conservatory plants, and its easy culture and free-blooming qualities should gain for it a wider range of cultivation than it has hitherto had. It belongs to the Iris family, is nearly allied to the *Ixias*, and has half tuberous roots, by means of which it is readily increased. It requires but little cultural care, for it is very tenacious of life, and will stand the winter if kept dry and covered over with a little straw in a shed or cellar. I once grew a great many for conservatory decoration in July and August, and well did they serve as associates to the Japan Lilies, Balsams, and fine-foliaged plants which play the most prominent part at this season.

In our gardens was a large glass house open at one gable end, which was considered the front, the sides being made of upright deals, each about a fourth of an inch distant from the other, so that although a valuable house for placing flowering plants in in the summer and autumn, it was of no use in this way in the winter months. Throughout the cold winter months, however, we stored in it ladders, garden seats, frame sashes, &c., and amongst other plants the *Tritonias*. These I stored away in a corner, covering the pots with some leaves or litter, so as to prevent the frost touching the roots, for our winters were commonly very severe. In this position they remained untouched till the end of February, receiving no water whatever during that time, yet the soil never became too dry. I then took them into the greenhouse, gave them a little water, and, as soon as time permitted, repotted them, using a compost of three parts good yellow loam, one of rotten manure or leaf-mould, with a good admixture of sharp river sand and finely broken crocks. In potting, I took particular care to have good drainage, and in turning out the plants, to preserve the roots from mutilation. If I wanted to increase my stock, I took off as many joints of the rhizomes as I thought convenient, and potted them. I also found it necessary to reduce the size of the plants sometimes, for unless that is done they get too big for suitable pots, and placing them in pots larger than ten or at most twelve inches in diameter gives them a clumsy appearance, and if their roots are too confined they come up spindly, and the leaves assume a yellow tinge in the autumn sooner than they otherwise would. After potting, I place the pots on stages in an airy house near the glass, in company with the Japan Lilies; I keep them just moderately moist at the first, but as they advance in growth I give them good soakings, and when they are throwing up their flower spikes I find they are greatly benefited by occasional applications of manure water. They need no further care throughout the summer than the support of a neat stake or two at the flowering season. They continue a long time in bloom, and as soon as their beauty begins to fade I cut over the flower spikes about half way down, but allow their base and all the leaves to remain untouched until they naturally decay, when I cut them over a few inches above the pot, and keep the plants a little drier than formerly. As soon as frost was likely to set in, I stored them away in their winter quarters, and treated them as before. The fleshy rhizomes, should the soil become too dry in the winter, are apt to get damaged, but when covered with leaves or litter such is unlikely to take place.

CLEMATISES.

It may not be out of place here to say that in the house above referred to the finer kinds of hybrid Clematises are grown, planted in the borders and trained across the roof. There is no protection whatever given to them in the winter, further than a good mass of litter around the roots, but not touching the stem. In this position they thrive remarkably well, and although in winter often subjected for a week together to 20° of frost, burst forth in spring with surprising vigour. The leaves are never removed until the buds begin to break, then when the dead wood can be distinguished from the living, the leaves and all inanimate portions are cut away. It is also often found necessary to remove a good many of the living shoots, to prevent overcrowding.

This is a beautiful house in the summer, in fact the Clematises

produce such a profusion of bloom that it is almost a pity to have other good plants under them, and unless the dropping flower-leaves are carefully removed every morning, they would certainly be very detrimental to the other plants. All the finer kinds raised prior to six years ago are planted in this house, and most glorious amongst them stands *C. lanuginosa*. The greatest enemy in our northern climate to Clematises and other plants in winter is dampness at the root, and where that can be guarded against, it is surprising what can be kept alive, even through our hardest winters. Beneath each of the Clematises I had a barrowful of rough stones placed and covered over with turf, so that there was no fear of water lying about their roots. In summer, however, the amount of water they get is enormous; but the more they get the stronger they grow, and, consequently, there is the greater need for pruning, tying, and regulating. WM. FALCONER.

TREE FERNS.

WHAT has contributed more to the embellishment of our conservatories, and taken away the monotony which used to prevail in the good old times (when a mass of gaudy flowers, arranged on a stage so as to show the pots well, or set in rows on the beds, was the *beau idéal* of gardeners), than these graceful inhabitants of the damp ravines of Australia, the Cape of Good Hope, and the West Indies? What is more beautiful than a fine *Dicksonia antarctica*, *Cyathea dealbata*, &c., for the centre of a conservatory? or two planted so as to form an arch over a walk leading from that part of the house set apart for flowering-plants to the cool and charming spot where delicate ferns soften the scene and charm the fancy? Most people love ferns, and wish to have representatives of their various modes of growth, but as many do not know what species are best suited for this purpose, I shall name a few of the best, both for greenhouse and stove cultivation.

STOVE OR WARM CONSERVATORY.

CYATHEA ARBOREA (WEST INDIES).—A very distinct and handsome tree fern, of tall and rapid growth, from ten to thirty feet high. It forms a splendid crown of pale-green, gracefully-spreading fronds, from six to twelve feet long, the midrib of which, as well as the stem itself, is densely covered with large white chaffy scales and hairs.

CYATHEA EXCELSA (MAURITIUS).—This is not such a large or rapidly-growing species as the last, its height ranging from twelve to twenty feet. The fronds are tripinnate, of a very dark-green colour, and form a very beautiful, somewhat arching crown. It requires stove heat.—Syn. *C. Cooperii*.

CYATHEA PRINCEPS (MEXICO).—For those who have a space of twenty feet to spare, no nobler fern can be selected than this. It grows rapidly and forms a stout stem, which, as well as the crown of the plant, and the midrib of the fronds, is densely covered with large, light-brown, or white chaffy scales and hairs, which impart a soft, silky appearance. The fronds are tripinnate, of a bright light-green colour, from three to twelve feet in length, and form a beautiful arching crown. This species may also be grown in the cool conservatory.

CIBOTIUM SCHIEDII (MEXICO).—A very elegant and free-growing species, with large, spreading, pendulous, pale-green fronds, from six to fifteen feet long, and rather irregularly disposed. The stem, crown, and midrib of the fronds are densely clothed with long, silky, chestnut-coloured hairs. Planted in a prominent position on a rockwork, in a large house, it presents a very imposing appearance. It may also be grown in the cool conservatory.

The soil best suited for these large tree ferns is turfy loam. The common practice is to use peat, but I have noticed that many imported plants had been taken out of loam, and, in some instances, out of clay. Any one who has seen a well-arranged house, with here and there a tree fern, will never be content without them; but they should not be associated with brick walls, as the ferns make the walls look barbarous, and the walls cause the ferns to look out of place. Many of the *Davallias* and *Polypodiums* may be grown on their stems, thus bidding their bareness and conferring additional beauty.

GREENHOUSE.

ALSOPIHILA CAPENSIS (SOUTH AFRICA).—A very fine evergreen kind, with a stem ten or twelve feet high, and a large handsome crown of bright pale-green fronds, from three to four feet long and somewhat erect in habit. The plants of this genus require an abundant supply of water, both at the root and on the stem, to induce them to form good heads or crowns; they should also be carefully shaded when the fronds are unfolding.

CYATHEA DEALBATA (NEW ZEALAND).—This is a large-growing species, and forms a good companion for *Dicksonia antarctica*. In its native country it attains a height of twenty feet or more, but in our houses seldom exceeds eight or ten feet. The stem is almost black, slender, and branched, and bears a fine crown of broadly-oblong, twice-divided fronds of a dark-green colour above, and of a beautiful silvery white beneath, from which it has obtained in New Zealand the popular name of the "Silver Tree Fern."

CYATHEA MEDULLARIS (NEW ZEALAND).—Another gigantic species, and the largest of the family, the stem attaining a height of upwards of thirty feet, with a noble crown from twelve to twenty feet across. It is only suited for a large house.

DICKSONIA ANTARCTICA (AUSTRALIA).—This, which is one of the noblest, is also perhaps the hardest of the tree ferns.



Dicksonia antarctica.

The trunk varies considerably in thickness, and in its native country attains a height of thirty feet or more, bearing at its summit a magnificent crown of dark-green lance-shaped fronds from six to twenty feet long, beautifully arched, and becoming pendulous with age. The crown itself is frequently ten or twelve feet across, and is evergreen.

DICKSONIA SQUARROSA (NEW ZEALAND).—A very handsome species, with a black, muricated, hirsute, stiff stem, slighter than in the preceding species. The fronds are also more rigid in habit, and not so pendulous, forming a rather flat table-like crown. They vary in length from three to six feet or more, and are of a dark-green colour. The stem has often a branched appearance, from the young plants which are formed at intervals upon it. This is an excellent fern for a small house.

All the foregoing may be placed out-of-doors in summer,

but they should be put in sheltered nooks and dells, not only to protect them from high winds, but because such positions are more naturally appropriate for them than the open ground, and best represent the shady, quiet, and secluded conditions of their native habitats. When placed out thus, care should be taken to keep the stems from getting too dry, by syringing them freely whenever they seem to require it.

J. CROUCHER.

A Vegetable Conservative.—One of the most comical plants I ever had to deal with is the Turk's Cap Melocactus. My specimen came direct from Port-au-Prince by mail steamer a year and a half ago, in a basket of native soil, but neither in that nor in any other has it since exhibited the slightest radical tendency. On arrival the plant was about ten inches wide at the base, and a foot high, with the flowering cap already formed; it had a few bits of stringy root, and I cut off such portions as appeared decayed or injured; after this, despite the trial of all known means of developing root-action, it remained just as it was for nearly a year, only proving its vitality by pushing up an odd flower now and then, which flower may be roughly described as resembling an obovate coral knob, nearly an inch long and about one-third of an inch in diameter near the top. Tired of this want of progress, and wishing for some sign of development of offsets or other means of reproduction, I (thinking to give it a fresh start on a new footing) cut a slice clean off the bottom with a sharp carving-knife, and, after allowing it to dry for a few days, placed the plant on a pot of sandy soil, with a superstratum of pure sand, and put it on a dry shelf, that would have been sunny had there been any sunshine this summer; there it is still, rootless yet unchanged, a very emblem of do-nothingism. What am I to do with this vegetable conservative?—W. TEASDALE, *Headingley, Leeds.*

Oncidium Obyzatum.—Permit me to recommend this as a most valuable decorative plant, and, to those who have to provide large quantities of cut flowers, a most useful one. It is not a very old plant, having only been introduced a very few years since, consequently few have had any experience with it or know what the plant is capable of. I saw, in the select collection of E. Wright, Esq., of Granelly Hill, near Birmingham, a small plant with one lead, which produced last year two very fine spikes, and I thought Mr. Hodges, the gardener, had succeeded in growing the plant to the greatest perfection. I should then have felt very well satisfied if I could have attained like results; but last summer, I had a small plant with one lead which produced two bulbs, and these threw up three spikes and commenced flowering last March. The produce of these three spikes was some hundreds of beautiful flowers, which emitted an agreeable odour. They lasted a long time, and when they had ceased blooming, the spikes immediately commenced to throw out a great number of side shoots, and produced another crop of flowers quite equal to the first. The second crop on two spikes was finished last week, and the third spike is preparing to produce a third crop, which promises to be equal in number and effect to any of them; so that for two months or more yet it will continue to gladden myself and a few friends, who often come to see whatever curious or pretty Orchid may be in flower here.—S. EYRE, *Leck, Staffordshire.*

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Jacquemontia violacea.—Let me recommend all lovers of good stove climbers to try this. For light arches, &c., in the warm stove I can find nothing to surpass it, and the sweet blue colour of the delicate cup-like flowers is much admired by all who see them.—P. L.

Grevillea Manglesi.—This is the weeping Willow of the conservatory. All the slender shoots droop like those of a weeping Willow, only even more gracefully. It is seldom seen in our gardens, but there is a good specimen which well shows the habit of the plant in one of the cool houses at Glasnevin.

Wahlenbergia hederacea and Anagallis tenella.—I have a very pleasing way of growing these interesting native plants. It is not in the bog garden, not among alpine plants, not in the hardy fernery, but in the stove. I find they grow freely on the surfaces of pots of soil requiring to be kept in a constantly moist condition, and hang down four to six inches over the edge of the pots in the most graceful manner, flowering abundantly. In many cases where sphagnum is used, a few bits of these placed in it would soon take root and grow quickly. It need scarcely be added that no plants would more agreeably help to hide the red pots that contain our specimen plants.—J. B.

Perpetual Flowering Tree Carnation La Belle.—The flowers of this beautiful variety are of the purest white, and strongly clove-scented. It was shown by Mr. Backley, of Leyton, the raiser of it, at one of the Royal Horticultural Society's meetings last month. The plant, then three years old, was trained in the form of a balloon five feet in height, and nine feet in circumference. It is one of the most free flowering of its class; indeed, so profusely does it bloom, that during all last winter, Mr. Backley cut no fewer than five dozen blossoms every week for market from this one plant. It is now in a small tub, in a compost consisting of sharp sand and decayed turf. Like others of its race, it dislikes heat; 45° in winter is as high a temperature as it can be subjected to with safety. It also flowers best without stimulants, pure water agreeing better with it than anything stronger.

THE GARDEN USES OF LIME.

LIME being a necessary and essential constituent in the food of plants, as well as a useful agent for converting inert substances existing in the soil into available material for promoting vegetation, and also for acting mechanically in lightening the texture of strong obdurate clayey soils, it is somewhat surprising that it is not more generally used for promoting these ends in gardens, more especially when it is further acknowledged that culinary vegetables, and even fruits, are finer in quality, more robust in constitution, and better coloured when grown in soils that have a proper proportion of lime in their composition, than when grown in those where it is very deficient. Yet how frequently do we see gardens, and more especially those of amateurs and cottagers, cropped, and even richly manured, continuously for long periods, without the application of such a necessary ingredient being ever thought of. But although the admixture of lime with the soil is so essentially necessary, both as a manure in itself, and as a stimulant to other manures, its application in the garden is no less beneficial for the destruction of plant-devouring slugs, injurious insects, and the unsightly growth of mosses and lichens; for all of which purposes the late winter and spring months are those in which it can be best and most beneficially applied. The ground being cropped in summer, it cannot be spread and covered in with facility unless in exceptional cases, such as between the clearing away of early and the sowing or planting of succession crops; if deferred till autumn, it becomes diminished in action from being washed and wasted during the immediately succeeding dull and rainy period of the year. Yet, even in early autumn, few would begrudge a good substantial top-dressing of quicklime to their Strawberry plants, if they were aware of the havoc which it makes among the slimy broods of the worst fruit-destroying nuisances of the past Strawberry season.

To check snails and slugs in time, commence soil-liming with the sowing of early seeds, when the days are sunny and the earth sufficiently dry to allow of working among the soil with freedom. Use hot or quick-lime liberally, and merely hoeing, raking or pointing it in on the surface; give good coatings of it also over Strawberry drills, by boxwood edgings, the sides of walls, and on other vermin-harboured places; renewing surface dustings frequently afterwards, when it becomes washed away, saturated, or inert. Nor should the extirpating effects of lime, or lime-water, upon worms pass unheeded, when they disfigure the surfaces of fine grassy lawns and bowling greens with their unsightly earthy outcasts; or when they abound among small recently-planted seedlings to such an extent as to cause their destruction by turning them out of the earth and by drawing them into their holes.

Though hot lime may not extirpate many of the numerous insects which infest fruit trees and bushes, yet it is less or more hurtful to most of them; and the best time and mode of applying it is just before the buds begin to open; then, on the morning of a quiet day that is likely to continue dry and sunny, syringe over all the branches with water, or, better still, with soap-suds, till they are thoroughly wet, then dust on the hot lime till no portion remains unwhitened. Should the weather actually continue dry through the day, and no deluging rain fall immediately after, the lime will adhere for a considerable time, and no renewal of it need be made till next year.

Mosses and lichens, even admitting that they are harmless, are nevertheless unsightly when thickly dispersed, in luxuriant growth, over fruit-tree and bush stems and branches; and we would as soon think of allowing the growth of gross weeds among fine flowers as that of these epiphytes on what are expected to be fruit-laden boughs. They are quickly destroyed by lime applied as in the last case, dry up and crumple into dust, and become dispersed, together with any insects or insect ova that may be associated with them, by the first fanning wind, or by their own gravity, light though they be, so as to leave the bark clean and smooth where before it was foul and rugged. If the application of lime to trees and bushes is made too early, it is liable to be washed off before the sun becomes sufficiently powerful to impart its full share of burning influence; while, if delayed till the young leaves and blossoms begin to protrude, these are liable to get somewhat browned or scorched: hence the propriety of choosing the time before mentioned for applying it. The caustic properties of quick-lime on the hands, and the whitening effects of it upon the clothes, are, we know, sometimes urged against its use by amateurs; but old gloves will obviate the first, and old clothes or an enveloping sheet the last of these objections—both of which are so trivial, that few will ever think of naming them after fully testing the garden uses of lime for accomplishing all, or any, of the purposes for which it is herein recommended.

Kew-rious Coincidence.—It is said that Mr. Ayrton was born at Kew in 1816.

THE PASHIUBA PALM.

AMONG the singular aspects of vegetation which meet the eye of the traveller in tropical regions, none is more striking and remarkable than that presented by the Pashiúba (or Paxiúba) Palm of Brazil (*Iriartea exorrhiza*). The first sight of this tree suggests the idea that some careful hand has been at the trouble of placing round its base a tree-guard to protect the stem, somewhat after the manner in which the trees in our parks are railed and fenced in from cattle. A nearer approach, however, discloses the fact that the supposed tree-guard is neither more nor less than the roots of the tree itself, which are disposed in this strange fashion. These roots are of the kind known as "aërial," and spring from the trunk above the ground, new ones being successively produced from a higher point than the last. They take an oblique or diagonal direction until they reach the ground, into which they descend and root themselves. As fresh ones appear, those underneath decay and die off, leaving the tree supported by a hollow cone of roots, which is sometimes so high that a man may stand in the centre, with the stem of the tree sixty or seventy feet in length, immediately over his head. These roots are densely covered with small, hard, tubercular prickles, and are used by the natives as graters for reducing the inside of the cocoa-nut to a pulpy mass to be boiled with rice and water. Two of these graters were sent some time since by Mr. Wallace to the Museum at Kew. The same peculiar mode of growth is exhibited by *Iriartea ventricosa* and several allied species.

MEMORANDUM OF THE FIRST COMMISSIONER ON THE MANAGEMENT OF KEW GARDENS.

The powers and duties of management in relation to Kew Gardens, in common with other parks and gardens, are by statute vested in the Commissioners of her Majesty's Works and Public Buildings. Anything authorised to be done by the Commissioners may be done by the First Commissioner, subject to the orders of the Treasury. The Commissioners are empowered to appoint, with the approval of the Treasury, the technical officers under the Board, and the Treasury is empowered to appoint the secretary, clerks, messengers, and officers, except the technical officers. The Commissioners are empowered to remove any of the officers of the department. There does not appear to have been at any time any organised code of instructions for the management of Kew Gardens, but it seems that the business has been conducted as follows:—

DEPARTMENTS.

The establishment at Kew, for the purposes of administration, subject to the authority of the Commissioners, has been divided into four branches—Botany, Horticulture, Police, and Works. The department of botany is under the immediate direction and control of the Director of Kew Gardens, assisted by a special staff of officers. It comprises the Botanic Museum and Library, the collection and interchange of botanical specimens, whether for the herbarium or cultivation, and all other matters pertaining to the pursuit of botanical science. The department of horticulture is under the immediate cultivation of the Curator of Kew Gardens, subject to the orders and control of the Director of Kew Gardens, as the responsible head. The Curator carries on the cultivation of the gardens with a large staff of gardeners and workmen. The police comprises park constables and gatekeepers, appointed by the Commissioners, and police constables under the Metropolitan Police Commissioners, assisted by the gardeners at Kew, acting as constables as required. All questions relating to the use of the gardens by the public are determined by the Commissioners on the reports of the Director. The works are carried on under the direction of an assistant surveyor of works, an officer of the Commissioners, who reports to them directly, not through the Director of Kew Gardens. Dr. Hooker having for some years held the office of assistant director, was appointed Director in 1865, by a letter from the First Commissioner, enjoining him to give his whole time to the business of his office, and to observe strictly such orders as he might receive from the First Commissioner. The office of assistant director was then abolished as unnecessary. The present curator of Kew Gardens, Mr. Smith, was appointed on the superannuation of his predecessor in the year 1864.

BOTANY.

With the department of botany, it would seem that the Commissioners have not interfered beyond deciding questions affecting expenditure, of which the following are examples:—On the application of the Director in 1864, the Commissioners communicated to him that the Treasury had sanctioned the publication of the "Flora of



THE FASHUBA PAINT.

Tropical Africa," through the medium of the Stationery Office, in whose estimates the cost was to be charged. In 1868 the first volume was published, and in 1871 the second. It becoming necessary to apply to the Treasury respecting a payment on account of it, their lordships directed that the stock, after deducting the presentation copies, should be transferred to the Stationery Office. This was communicated to Dr. Hooker on the 29th of September 1871. A letter was then received by the Commissioners from the Stationery Office, asking for certain particulars relating to the work, with a view to the sale of the surplus stock. This was referred to Dr. Hooker for report, when he replied on the 22nd of February following that, in his opinion, the copies ought not to be sold. A further correspondence took place, and ultimately Dr. Hooker was informed, in accordance with the views of the Treasury, that it would be inconsistent with their views that a work of the kind should not be kept for sale as well as for occasional presentation, and that the principal stock should be kept at the Stationery Office.

HORTICULTURE.

In 1869 Dr. Hooker applied to be sent as a botanical commissioner to St. Petersburg, at the public cost, but the Commissioners, in accordance with instructions from the Treasury, declined to comply with his application. In the department of horticulture, the degree of interference and control by the Commissioners has varied with successive First Commissioners. In Dr. Hooker's report on Kew Gardens for 1870, he states that the plantations made by Sir William Hooker failed, because "permission could not be obtained either to make sufficient clearances, or to disturb the roots of the old trees by trenching the ground;" and on being requested by the First Commissioner to elucidate this statement, Dr. Hooker has given the following graphic account of the control of former First Commissioners:—"My statement respecting permission to thin, &c., the trees in the pleasure-grounds had reference to the time (previous to 1865) when all matters of importance were discussed between the First Commissioner and the Director, before becoming the subject of official correspondence with the Board. I was myself present at several conferences on this subject between my father, Mr. Philipps, and Mr. Milne, previous to 1848, when the refusal in question was given, on the ground that . . . had prohibited the removal of any old trees whatever. Since my return from India in 1851, my predecessor, in my presence, drew the attention of more than one First Commissioner to the state of the trees, with a view to making clearances, but in vain. On one such occasion, he and I had a large number of old trees marked, with a view to the First Commissioner approving of their removal; but on his inspecting them, he ordered them to be headed instead. Subsequently some of these very marked trees, then stark dead, were pointed out to another First Commissioner as examples of the state so many were coming to, and permission asked to write to the Board and suggest the removal of many trees, with a view to replanting; but the First Commissioner, in my presence, shook his head." Again, Dr. Hooker has stated, that when Lord Llanover introduced the present system of flower beds, he opposed it almost rebelliously, but it is now one of the chief attractions to the hundreds of thousands who visit the gardens. It is well known that Lord Llanover greatly increased the efficiency of the Commissioner's administration, and the records of the office, of which a few extracts are annexed, will show how vigorously he exercised the controlling power of the Commissioners over Kew Gardens.

KEW AS A PUBLIC NURSERY.

But the management of Kew Gardens was not limited to their own requirements. They were made use of as a nursery for the other parks and gardens under the control of the Commissioners. The result of this does not seem to have been satisfactory, as shown by a letter of the Director proposing to sell 10,000 elms, because the superintendents of other gardens had no use for them, whilst at the same time they were unable to find in Kew Gardens the trees they required. The First Commissioner has, however, taken no part in the horticulture of Kew Gardens, nor has he interfered with it, except on the occasion when the Director of the gardens represented that it was necessary to expend the sum of £1,500 in horticulture, to restore the sylvan scenery of the park, of which he submitted a specification. As soon as the sanction of the Treasury was obtained, Dr. Hooker received the requisite instructions from the First Commissioner, leaving the mode in which they should be carried out to the Director; thus the only act of the First Commissioner respecting the horticulture of the gardens has been to grant that which his predecessors had denied. The estimates for the expenditure on botany, and horticulture, and police, are prepared annually by the Director of the gardens, and submitted to the Commissioners for their consideration, in accordance with instructions forwarded to him annually in varying terms; but it is to be observed that these

are not the whole estimates for the gardens, but only for the services in the gardens under the Director's charge. When the First Commissioners have been of opinion that the amount asked for was excessive, it has been customary for them in communication, and in some cases without communication, with the Director, to strike out parts of the estimates. But until the money has been voted by Parliament, the changes which have been made have rarely been notified to the Director, and in most cases he has not been informed how much was submitted to Parliament until the estimates have been printed, and a copy has been sent to him. Exceptions to the usual course have arisen in cases of important services which have been the subject of correspondence or discussion.

DR. HOOKER AND THE FIRST COMMISSIONER.

In discharging the duties of the Director under the Commissioners it was the practice of the late Director to attend the First Commissioner frequently at the office of works, and also to attend the assistant secretary, who was intrusted with the business of the parks. Dr. Hooker appears not to have continued this practice to the same extent, although he has on frequent occasions called at the office to discuss changes under consideration. It has also become the practice to send the Curator of the gardens to the office to explain matters of account, and to consult the secretary upon some pressing business. The First Commissioner, shortly after his appointment, informed Dr. Hooker that he should be at all times happy to see him. To show his confidence in Dr. Hooker, he requested him to examine into and report on the attacks which had been made in a work recently published on the administration of the parks and gardens under the charge of the Commissioners, which report Dr. Hooker obligingly furnished. The First Commissioner not having interfered either with botany or horticulture, the Director has transacted the business through the secretary, though it was quite open to him to transact it with the First Commissioner. Dr. Hooker has only thought fit to call on the First Commissioner on two or three occasions, when specially desired.

WORKS.

The Department of Works involves different considerations. Lord Llanover particularly reformed the administration of the parks and gardens. With them the First Commissioner has interfered as little as possible, but he has undertaken to effect an entire reform of the administration of the Department of Works. Before 1869 the administration of works under the Commissioners was committed to the care of the assistant surveyors of the department, or of other persons specially employed on particular works or duties. The architect and surveyor of the Commissioners not being required to give his whole time to the public business, there was no superintending officer to aid the Commissioners in the regular supervision and control of the various persons employed under them in relation to works. In Kew Gardens the works were entrusted to the assistant surveyor of the district in which they are situate, and were carried on by him in the same manner as all other works in his districts. It was his duty to ascertain by personal inspection of the works, and by communication with the persons to whom the use of buildings was entrusted, what works or repairs would be required in each financial year; and to form his own judgment on all requisitions or suggestions made to him by such persons. Mr. Storie has for many years held the office of assistant surveyor of the district. He has conducted his business at Kew Gardens through a resident clerk of the works and a mechanical artificer. When works of importance were to be undertaken in the district, they were sometimes entrusted to the assistant surveyor, and sometimes to architects or other persons specially employed for the occasion. The general relations of the assistant surveyor to the Director of Kew Gardens are illustrated by a letter of Sir William Hooker showing how the duties were performed, and that in all the details, including the work of heating, there was no real difficulty in carrying on those services. With regard to larger works at Kew, the Commissioners employed Mr. Decimus Burton to construct the conservatory, or temperate house, the Director being required to furnish a statement of the horticultural requirements. In 1863 part of the work was altered by the direction of the Commissioners, under the orders of the Treasury, without consulting the Director. When informed of the change, he vigorously protested against it. The Commissioners, with the sanction of the Treasury, proceeded with the work in 1864. In 1855 the Commissioners determined to erect a museum. The steps taken for that purpose, as regards the Director at Kew, are illustrated by his letter to the First Commissioner, and by the letter of the Secretary intimating to the Director that the First Commissioner had given instructions to Mr. Storie, the Assistant Surveyor, for the works of the museum at Kew Gardens to be proceeded with forthwith on the site which he had selected near the water, and to request that the Director would state how much space would be required for

the herbarium and how much for the library. The organisation of the water supply for Kew Gardens was placed in the hands of Mr. Simpson, the engineer, who prepared plans and estimates for that service, and carried it out under his own superintendence. The Assistant Surveyor has prepared his own estimates for the services in his charge at Kew Gardens, and submitted them to the consideration of the First Commissioner, who has made such inquiries and modifications as he deemed proper. The estimates of the Director and Assistant Surveyor have then been framed into one estimate, and added to the other estimates of the Commissioners under the general head of Royal Parks and Gardens, and submitted to the Treasury for sanction to be laid before Parliament. In passing this estimate it has been the duty of the First Commissioner to have regard not merely to the amount for each park or garden, but to the whole expenditure proposed for the year.

THE HEATING APPARATUS.

In October 1865 the new Curator of the gardens called attention to certain defects in the heating of the houses there, in a letter to the Director, which he forwarded to the Commissioners. Subsequently Dr. Hooker forwarded a proposal of Mr. Ormson, who carries on the business of horticultural works at Chelsea, to put up one of his patent boilers. This proposal was approved conditionally, but the First Commissioner determined on July 1, 1866, to appoint Dr. Hooker, in conjunction with Mr. Starie, the Assistant Surveyor, Mr. Smith, the Curator, and Mr. Ormson or Mr. Weeks, another person in the same business, to report to the Board the result arrived at as to the best means of remedying the defects complained of, and of economising fuel. On May 29, 1867, Dr. Hooker, Mr. Smith, and Mr. Starie, made a report. They agreed in some recommendations, but differed in others. Mr. Starie did not recommend Mr. Ormson's patent boiler, whilst Dr. Hooker and Mr. Smith recommended he should be permitted to fix one of them. Mr. Ormson made a separate report. These were transmitted by Dr. Hooker to the Commissioners. The First Commissioner having considered these reports and other suggestions, at length, on June 19th, after communicating with Dr. Hooker, determined to appoint an independent committee, composed of Mr. Eyles, of the Royal Horticultural Society's Gardens, Mr. W. Ingram, the Duke of Rutland's gardener, with Dr. Percy, the superintendent of heating and ventilating the Palace of Westminster, to inquire into the system of heating the houses at Kew Gardens, with the view of considering and suggesting what improvements could be made. Of this the Director was informed on the 26th of June following, after the Treasury sanction had been obtained. The business was thus taken altogether out of the hands of the Director and Assistant Surveyor. A report was made in August 1867 to the First Commissioner by Messrs. Eyles and Ingram, in which Dr. Percy did not join. They recommended various improvements and works, and concluded as follows:—"We would also recommend that a useful man, capable of making any alteration or repairs in the heating department at Kew, also to keep the department in good working condition, be added to the staff, and to be placed under the direction of the Curator; he being wholly responsible for the good cultivation of the valuable collections of plants in the Royal Botanic Gardens at Kew, should, in our opinion, exercise control over the heating department, supplying, as it does, one of the vital elements of his success." A report having been received by the First Commissioner from the Director respecting the works, it was referred to the Assistant Surveyor, and his reports were also received, to which the Director replied in a further report. Dr. Hooker was then authorised by the Commissioners to carry out certain urgent services for heating. On October 29, 1867, the Director was informed, by letter, that the First Commissioner, having had under his consideration various reports on the heating of the plant houses, &c., at the Royal Gardens, Kew, and the questions to which they have given rise, wished that for the future all responsibility connected with warming and ventilating the palm and plant houses and museums, and with the preparation of the estimates necessary for such purposes, should devolve upon him as the Director of the Royal Gardens, the works being conducted under the superintendence of the Board's surveyor for the country district, and that the estimates for the ordinary works of repair and maintenance should rest with that officer, who will, in preparing them, place himself in communication with the Director. Under this arrangement various services were carried on at a considerable outlay; but the First Commissioner has been unable to discover that any person professionally conversant with the technical business of construction held himself responsible for the technical construction of the work. The contractor would seem, in these respects, to have been his own master. At the same time, considering the defective organisation of the department, the proceedings above noticed might be regarded as a natural result, for which no one was to blame.

(To be continued.)

THE ARBORETUM.

HARDY TREES AND SHRUBS.

BY GEORGE GORDON, A.L.S.

THE CYPRIAN GUM CISTUS (CISTUS CYPRIUS).

THIS forms a hardy sub-evergreen shrub from four to five feet high, and produces flowers profusely in succession during the months of June and July. It is, perhaps, the very handsomest of the genus, having white flowers of great size and beauty. It is a native of the Island of Cyprus, where it grows on hills; it will, however, succeed in any good garden soil that is rather dry, and is easily increased either by means of seeds or cuttings. It was first introduced in 1800. The leaves are opposite, oblong-lanceolate, entire, flat, stalked and sub-evergreen, with the upper surface smooth and the under one clothed with hoary down. The branches are long, slender, and rather spreading, and the young shoots smooth and more or less covered with a clammy gluten. The flowers are produced in great abundance on terminal, many-flowered, deciduous-bracted peduncles, and are from 2½ to 3 inches across; they are five-petalled, pure white, with a dark rich brownish crimson stellate blotch near the base of each petal, and orange-coloured at the base.



Cistus Cyprinus.

The blossoms, in fact, resemble a large single rose, but are of short duration, only lasting, in general, a single day. The fruit is a dry five-celled capsule, more or less covered by the calyx, and ripens in September. The Cyprian Gum Cistus forms a splendid plant for ornamenting rockwork or dry banks, but it requires to be fully exposed to the sun, as the flowers only expand under the influence of bright light. This species is generally known in the nurseries under the false name of Cistus ladaniferus, which is a different kind, having white flowers wanting the rich dark blotch on the petals, and not much more than half the size of those of this plant. The synonyms are Cistus ladaniferus planifolius, C. ladaniferus maculatus, and C. salicifolius.

THE ORIENTAL BLADDER SENNA (COLUTEA CRUENTA).

THIS forms a showy, free-growing, many-stemmed, round-headed, deciduous bush, from four to eight feet in height, which thrives well in any common garden soil, and produces a fine effect either planted singly on the lawn or in the shrubbery. It is a native of Iberia and the Levant, and is readily increased by seeds, which are produced in great abundance. It was first introduced in 1731. The leaves are alternate, pinnate, glaucous, and deciduous, with from four to six pairs of leaflets and an odd one; the leaflets are rather small, obovate, emarginate or slightly lobed at the apex, rounded at the base, and mostly opposite, but sometimes otherwise; they are bright green and smooth on the upper surface, downy beneath, and set rather distantly on the stalk. The young shoots and petioles are pubescent. The flowers are pea-shaped, rather large, and of a reddish-copper colour, with a yellow spot at the base of the standard or upper petal; they are produced in June or July in from three to six-flowered axillary racemes, which are a little shorter than the leaves. The fruit is a dry membranaceous, inflated, oval, boat-formed, reddish pod, which when ripe, in August, opens at the point. The synonyms are Colutea orientalis and sanguinea.

New Way of Cutting Wood.—A curious invention has just been patented through the American Patent Agency by Dr. Robinson. A galvanic current in sufficient quantity, when passed over fine platinum wire, raises its temperature to a white heat. The most important application of the principle consists in the employment of the heated wire in

surgical operations as a substitute for the knife. It was found that red-hot wire cuts or burns its way through the flesh. The inventor discovered that wood, a comparatively dry substance even when green, could be cut in the same way. By arranging the wire with handles or other means, so as to guide it readily, trees, logs, or plants may be cut as desired. There is here, therefore, a simple and easily applied force, which may be employed to fell trees, divide them into logs, and perform all the operations of the saw and the axe. The surface of the wood is slightly charred, but the black layer is very thin. The battery employed need only be of the simplest character.

Trees and Bedding Out.—A correspondent sends us a complaint against the trees which interfere with his "bedding out." Long lines might be longer only for these disagreeable impediments, which also cast a shade injurious to Tom Thumb and his brethren. We are really sorry for him, but cannot allow him more space than is necessary to barely explain the amiable nature of his desires, which seem to be that, as myriads of precious plants were thrown on the rubbish heap to make way for the ribbon system, it would be much in favour of that system if most of the trees that cumber our pleasure grounds were sent to the timber yard. We quite agree with him in one point—that it would be easier to make what he calls a "splendid display." If, however, we may venture to offer a word of advice, it is that it would, on the whole, be better to seek for some flat already naked surface on which to operate.

Epping Forest.—This forest, which little more than thirty years ago consisted of between 6,000 and 7,000 acres, now contains only about 3,000 acres. In that short period, by legitimate enclosure and by illegal encroachment, the beautiful wood has been reduced by more than a half in its extent. It is impossible to say, until the Commission appointed under the Epping Forest Bills has completed its inquiry and made its report, how many of the enclosures are legal and how many illegal; or, in fact, what extent of the forest is actually possessed at the present time by the people. It is almost inexplicable that so much of so beautiful a forest should have already disappeared. Much more would doubtless have gone in the short period of twelve months that has elapsed, since the movement for its preservation acquired an additional impetus by the action of the Forest Fund Committee, but for the vigorous action of that Committee. It was found to be an easy matter for lords of manors and others to add by illegal enclosure to the land already possessed by them. It was only necessary to throw their fences further out into the forest; and this process, if quietly and gradually accomplished, would frequently pass unnoticed. When a bold and unscrupulous enclosure was made, probably the frequenters of the forest would look and wonder at the change; but no steps would be taken to bring the offenders who thus despoiled the people of their open space before the courts of law. For thirty years this kind of thing has been going on; and by some means or another, legal or illegal—but we fear, mostly by illegal means—Epping Forest has been half eaten away.

NOTES AND QUESTIONS ON TREES AND SHRUBS.

Dacrydium Franklini.—Dr. Moore informs us that Mr. McNab, of the Edinburgh Botanic Garden, finds this interesting New Zealand Conifer to be perfectly hardy in the Botanic Garden there. As it is one of the most graceful objects that exists in the shape of a tree, we are sure many will be glad to hear this. We hope to see it tried extensively in the milder districts.

Replanting Evergreen Oaks.—Some of the old evergreen Oaks in the College Botanic Garden at Dublin having become too large for their neighbours, and their destruction or removal being inevitable, Mr. Bain headed them close in, to within seven feet or so of the ground, and treated the roots much as if the stumps were to be thrown away. Planted again, these stumps have in all cases pushed vigorously, and some of them now form fine specimens.

Berberis fascicularis.—This forms one of the most beautiful standard shrubs we have, and is also a grand plant for covering walls from seven to ten feet high. The habit is neat and well furnished, and the aspect of foliage distinct and pleasing. Specimens on my lawn in Hampshire are eight feet through, and about seven feet high. *B. tenuifolia* is also forming a most ornamental shrub. —A. D. S.—[This last is also very fine at Glasnevin.]

Ornamental Hypericums.—Will you kindly tell me the name of the handsome *Hypericum* sent, and tell me if there are any other kinds worthy of a place beside it? I find it an invaluable shrub; the waxy buds are like those of miniature yellow Roses.—H. ELLIS. [It is the fine *H. oblongifolium*; *H. nepalense* is nearly as good, but more fragile, somewhat like *H. virgatum* in its habit. Both are as valuable as the common St. John's Wort, *H. calycinum*.]

Dracena augustifolia as a hardy evergreen.—This stately plant, an ornament of well-furnished conservatories, is now growing freely in the open air in the People's Garden at Dublin. Specimens planted at Woodstock, by Mr. McDonald, some years ago, are now five inches in diameter of stem. At Bicton, when we were last there, the plant was hardy and well-established. It is likely therefore that in many districts this noble plant will prove as useful as *Yucca recurva*.

Spiraea arifolia as a Wall Plant.—Many of us admire this lovely species as a shrub or low tree, but its value as a wall plant is not so well known. About half way up the long straight avenue which leads from Blackrock to Mount Merrion, near Dublin, there is a house (Villa Nova, Mr. Gilbert's), one side of which is covered with *Spiraea arifolia* to the height of about twenty-four feet; the plant seemed to have been in flower for months, and was yet, on August 8th, still producing its large panicles of unfolded buds like small pearls. A more strikingly beautiful object in the way of a wall plant it would be difficult to imagine.

Invigorating old Hollies.—Many of the fine Hollies now in the College gardens at Dublin, were a few years ago in a half-exhausted state, and were successfully treated by Mr. Bain in a novel way. A strip of bark two inches wide and about three inches long was removed from the wood, and a mound of good earth raised about the tree so as to cover this. New roots were soon emitted, and the trees soon assumed a healthy character. In other cases old plants were taken up and sunk a foot or so in the ground, a strip of bark being also taken off in this case. These sent out new and vigorous roots from the newly buried stem, while the original roots perished.

MARKET GARDENS ROUND LONDON.

BY OUR SPECIAL REPORTER.

MR. GEORGE STEEL'S, PARSON'S GREEN, FULHAM.

(Concluded from p. 132.)

VEGETABLE MARROW.

THIS is one of the principal vegetables at present in marketable condition. Mr. Steel grows several acres of Marrows. Those first planted have been in good bearing for over ten weeks, and the youngest have just been planted out on ground cleared of the latest Cauliflower crop, in lines twelve feet apart and nearly half that distance plant from plant. The earliest planted were put out the first week in April. For them trenches were dug out about twenty inches deep and from two to three feet in width, and filled with fermenting manure, which was covered over with the soil that had been thrown out of the trenches. The plants were then planted and covered with sashes or handlights, around and over which, for some time after, litter was placed at night. This plantation is now in a most flourishing condition, and the sashes and handlights having been long since removed; the surface of the soil was strewn with litter, and now the vines have met and run in amongst one another quite thickly. The plants are in excellent fruit-producing condition. The second plantation was made by digging out square holes sufficiently large to contain a good barrowful of fermenting manure, which was immediately placed therein and the whole covered over with the soil and treated as the others. The third plantation was treated precisely similar to the second, only that a short interval elapsed between the times of planting. The fourth plantation is a very large one, and is made on the bare ground, without any artificial assistance whatever, further than protection by means of handlights; some of them being less fortunate than others, had only round vegetable-baskets placed over them, but the cold and damp were too much for some of them, consequently they succumbed, and after a short time were replaced by others from the reserved stock. The sudden change the weather took in June did them a favourable turn, and ever since then they have grown amazingly, and although not much more than two months in the ground, they, as well as all other former plantations are in full bearing. They are planted in rows fifteen feet apart, and now occupy nearly all the space. Other plantations have since then been made, the last one in the second week of last month. This is planted out like the others, only the plants never had any kind of protection whatever. This is a crop that does not do well in dry grounds, and in such places gardeners do not grow it, for it would not pay the extra trouble bestowed on it in the way of carting water, &c. The plantations are gone over three times a week, and all fruit fit for market is cut for that purpose, the largest cutting being left till Friday, as there is always a greater sale for them on Saturdays than earlier in the week. The great spaces left between them in their earlier growth are not left empty, but on the contrary they are cropped with Radishes, Lettuces, Cauliflowers, Turnips, &c.

RHUBARB.

This forms an important spring crop, and Mr. Steel has plantations of it several acres in extent, besides a great quantity grown under orchard trees. In February the crowns are individually covered with a little heap of rank litter, from under which the leaves come up clean and crisp. As often as a good gathering can be had it is secured for market; or sometimes one plantation is cut for this market day, and another separate one for the next, and so on, thus having a sale of leaves every market day. For a long time after the litter could be dispensed with as a protection from frost, it is retained solely for the purpose of obtaining nicely coloured, crisp, and tender stalks, for they find a much readier market than those that are unprotected, however young. In preparing them for market they are tied into bundles with willow twigs. The distance between the rows of rhubarb, and also the plants in the rows, both in the open ground and under trees, is about three feet. Those under the trees are not mulched over the crowns in spring as are those in the open ground, because being partially shaded and protected by the branches, and the

crowns not being naturally quite so strong, their produce unprotected is thus more tender than that of the other plantations. They are not, however, so much shaded as to cause them to come up spindly, for they are several weeks in good bearing before the trees begin to break forth into leaf, consequently the naked branches act more as a protection than as a shade.

SEAKALE.

Of this, Mr. Steel has some acres of excellent plants in lines about eighteen inches apart each way. These were planted between Cauliflowers the first week in April, small pieces of roots being used that were cut off those that were taken up for forcing. These roots are cut up into pieces about four inches long, laid quite thickly on a prepared bed, and then covered with a few inches of soil. At planting time they are lifted, placed in baskets, and planted with a dibber perpendicularly in lines at the above distance between Cabbages, Cauliflowers, or other crops. Here they are allowed to remain, and the other crop being removed, one of Lettuce is put in, which occupies the space until the Seakale comes up and unfolds its leaves. The Lettuces do not take long before they are ready for market, and are removed in good time to permit of the ground being given over entirely to the Seakale. These plants can either be lifted wholly for forcing, or every second line can be lifted for that purpose, and the other left for blanching in the open ground. Forcing is performed in the usual manner, by lifting the roots and placing them in frames, covering them with some soil, and the frames with some litter to darken them. In the open ground blanching is done by earthing up the rows from the intervening spaces just as is done with Asparagus. The shoots, as they appear above ground, are cut away at their base, leaving the neck uncovered. From this cut several shoots may spring, but they are removed, leaving only three, or more frequently two, to remain throughout the summer.

SPINACH.

This is only grown in spring, when there is a good demand for it. Spaces under trees are often sown broadcast with it, and, as the trees are not furnished with leaves, they do not cause so much shade as would endanger the plants becoming drawn, thus preventing them from forming those fine healthy thick leaves so much sought after. Ground is also prepared, and the seed sown thinly broadcast over the whole; then Cauliflowers are planted at the usual distance apart. By the time the Spinach has come up the Cauliflowers will have become well established, so that the Spinach, which as soon as ready is removed for market, could not injure it much. When the Spinach is removed, the Cauliflowers will require all the space, consequently the ground is gone over at once, hoed, allowed to rest a few days, then some soil is drawn to the base of the plants. For market the Spinach is packed firmly in round vegetable baskets, and also in hampers of any size convenient for handling.

TOMATOES.

These are planted out earlier in Mr. Steel's grounds than they are in any other garden round London. This is owing to the sheltered position they occupy. Mr. Steel is a large grower of Mushrooms, and, as the ridges bear scarcely anything during the summer, they are partially deprived of their covering of litter, and along the base of these ridges on each side the Tomatoes are planted. The ridges being about four feet through have a space of two feet between each; the plants are planted three feet apart along the base of these ridges, and as they advance in growth they are pegged to the ridges. Here they are sheltered, and the whole surface of the ridges are mulched with litter, with a mulching in the bottom trench, which of itself, being a little below the ordinary surface, retains the moisture well, and in dry seasons in this respect is very beneficial. On the south side the fruit are fast swelling, some of them being already nine inches in circumference; those at the back are a little more backward, but still in advance of those planted in more open positions. The second earliest are planted in a south border, and attached to wooden stakes, and are forming fruit. The third or main planting occupies the ground that was used for the earliest Cauliflowers; they are also in bloom and have fruit beginning to form, the plants being tied to upright stakes. This proves the truth of the Oriental saying, that their lands produce three crops

a year. In very early spring the Cauliflower is planted; in February or March the ground amongst them is planted with Lettuces, which, as the Cauliflowers are removed, have the room to themselves, and they soon are also displaced for market; then comes the turn for the Tomatoes. During very dry weather they are heavily watered, but this has been done only once this season, and that just before the rains of the last few weeks.

TURNIPS.

Turnips also play a prominent part as a spring crop, but later in the year they are totally discarded, to make room for more suitable and money-making crops. They do not occupy the ground long, and consequently are very convenient as early vegetables. They are sometimes grown in broad beds, protected with some litter, just as they do with Radishes, and in this way good eatable Turnips are got by the latter half of April, soon after private gardeners have begun to think about sowing a few. Later in the season, however, a piece of ground becoming empty by clearing off Radishes, Cabbages, Celery, or other crops, is dug, harrowed, sown broadcast, and then rolled. This being done in April finishes Mr. Steel's Turnip crop. Celery ground is most commonly retained for Cauliflowers.

MOSS ROSES.

These are found to do pretty well under fruit trees, when the shade is not too dense. They are planted in lines three feet apart, and throughout the summer produce a great profusion of blooms. The space between them is filled up with Coleworts.

STOCKS.

These are the only annual or herbaceous flowering plants that are grown for sale in this market garden. They are planted amongst Moss Roses, where they can either be kept for affording cut blooms for immediate use, or for yielding seed to produce seedling plants for sale in spring.

FRUIT TREES AND BUSHES.

Of these there are several acres in Mr. Steel's grounds, and on some of his Pear trees there is a good crop, though, taking them on an average, the quantity of fruit may be rather below that of ordinary years; he has, however, no reason to complain, for many will not get as much fruit from their orchards this season as will pay their rent. Secondary sized trees are planted in lines about ten feet apart, and their distance in the row is regulated by their size. Beneath these Gooseberry bushes are grown, a row being put in a line with the trees and one down the space in the centre. The space between the Gooseberry bushes is cropped with Coleworts or Rhubarb. In some parts, beneath large trees, Rhubarb only is planted in rows three feet apart each way. The prolificness of this crop under such circumstances is wonderful; the leaves come up earlier in the spring than in the open ground, and at that time the trees being bare of foliage they have a fair amount of light. Where the trees are not too closely set, Moss Roses are grown in three-foot lines between them, for affording cut flowers. The alleys between the Roses again are cropped with Coleworts. When digging the ground in the orchard in winter, all good suckers are preserved, and in March, the roots and points of the shoots being shortened, they are planted in lines two feet apart, in deeply-worked ground, where they will remain until they are grafted the next spring, or some of them may be kept to the succeeding year. Gooseberry and Currant bushes are not propagated here from single cuttings, as is the case in nurseries and private gardens, but from layers. In March, whole rows of these bushes are layered quite flat on the ground and slightly covered with soil. When they begin to grow they push shoots from all the eyes. No sooner have these young shoots attained a length of six inches or so, than they receive another good earthing up, which is done by loosening the soil in the alleys between them, and working it in amongst the layered branches so as to cover the base of each of the shoots to a depth of a few inches. If necessary, and time can be spared, another earthing up is given. They are thus allowed to remain throughout the summer, receiving no further attention than that of keeping them free from weeds. In October they are lifted, cut up into pieces having three shoots each, and transplanted in nursery lines, in which they are allowed to remain

for another year; they are then lifted and transplanted to where they are to remain permanently, and all surplus stock is sold. The advantage of having three branches springing directly from the root instead of one is this, viz., that market gardeners commonly grow small fruit bushes under trees, where they are liable to many disasters, and if they happen to lose a limb, still two strong ones are left; while had there been only one shoot springing directly from the root, a new plant would be necessary.

THE GARDEN IN THE HOUSE.

CULTURE OF PLANTS IN ROOMS.

(Continued from p. 150.)

SOWING AND TREATMENT OF SEEDS UNTIL THEY GERMINATE.

POSITION.

THE raising of plants from seeds in a room can only be attempted on a small scale, as, though the pots containing the seeds may be kept in a position at a distance from the window as long as the seeds have not germinated, yet as soon as the young plants appear they must be placed close to the window. Moreover, it is only those seeds which are slow in germinating which can be kept for any length of time in a position at a distance from the window, while those of speedier growth must be placed close to the window very soon after they are sown. Besides, seeds of plants from warm climates should have a warm position in a heated room, and those of plants from cold and temperate climes require a corresponding temperature in a room which is not heated. Fast-growing annuals and perennials, which are intended for summer-flowering, may be sown as soon as the season permits, on flower-stands or other places in the open air. Care should be taken to prevent the drip from the roof, or from trees planted near the house, from falling on the pots in which the seeds are sown. Whoever wishes to try the experiment of raising tropical plants from seeds, which will require a heat of at least from 75° to 90° Fahr., must provide boxes in the shape of hotbeds, which will be useful either for seeds or for cuttings. These boxes should be as long as the breadth of the room-window, and about two feet wide. The back of the box should be about two feet high, and the front two or three inches lower. On the top is placed a light, similar to that of a hotbed, but made as light as possible, and fitting well into its place. At the distance of fourteen inches from the top a horizontal bottom pierced with holes is let in, which divides the boxes into an upper and a lower compartment. The upper compartment is for the reception of the pots. The holes in the bottom are covered with broken potsherds, and sawdust is filled in till it reaches within an inch of the top of the box. In this sawdust, which ferments gently, and should be stirred up from time to time or replaced with fresh, the pans containing the seeds are plunged up to the rims. The lower compartment is quite closed up, but has a door in the back. In order to heat the box, closed vessels containing boiling water are introduced through this door into the lower part, as many being placed there as it will hold. These may be either tin or earthenware vessels furnished with covers, or for want of better, the earthenware bottles used for holding mineral waters may be employed. It will be sufficient to fill these vessels once every twenty-four hours with hot water. Instead of these closed vessels, a tin or copper reservoir may be placed in the lower compartment. This is to be half filled with water, and heated by a spirit lamp placed underneath. This, however, is a much more costly apparatus than the other, and possesses no advantages over it in point of heating. Such a box as we have described, may, to suit its position in the window of the apartment, be tastefully constructed of wood, sheet-iron, or copper. A thermometer should be placed inside to regulate the temperature, which should range from 70° to 90° Fahr.

SOWING.

In sowing, ordinary pots, or still better flat pans, are generally used. In the latter the soil is better exposed to the air, and is less liable to become sour from the moisture which it must receive in order to promote the germination of the seeds. The bottom of the pot or pan should be covered with

a good layer of broken potsherds in order to secure perfect drainage. The pot or pan is then filled with suitable soil up to within from one-sixth to one-third of an inch from the top of the sides, so that the water may not run over in watering. The soil is then made even, and well pressed down with a smooth, flat, round piece of wood, having a handle let into the middle, and it is then ready for receiving the seed. The seed is then sprinkled over it in such quantity that when the young plants come up they will not stand too thickly together, as a crowded state during their first growth is not calculated to produce strong specimens afterwards. It is easy to guard against this in the case of large seeds, but very small seeds, such as those of Calceolarias, Gesneraceæ, Ericas, &c., should be mixed with fine white sand, placed on a piece of paper, and carefully scattered over the surface. The white sand will indicate the equable distribution of the seeds. Very small seeds are either not covered at all, or only to the depth of one-fourth of a line with fine sand, or with a thin layer of finely-chopped moss. The latter is to be preferred with the seeds of Ericas, Azaleas, Rhododendrons, Epacrises, and like plants. Larger seeds should, after sowing, be pressed down with the hand, or with a flat board, into the soil, and then covered with some of the same kind of soil as that with which the pot is filled, to about the same depth as the diameter of the seeds.

TREATMENT UNTIL THE SEEDS GERMINATE.

After the seed is sown, the pot should be watered with lukewarm water from a watering-can with a fine rose. This should be done carefully so as not to disturb the surface of the soil, and the finer and smaller the seed the greater necessity is there for watering cautiously. Pots in which very small seeds are sown without being covered, or only slightly so, are best watered by placing them in a saucer full of water, and using one of the refreshers previously described to water the surface of the soil. Until the seeds germinate, the surface of the soil should be kept moderately moist. An excess of moisture should be guarded against, so that no water may be allowed to stand in the saucer. This in the case of slowly-germinating seeds would produce sourness in the soil, which would prove very injurious to the young plants. The larger seeds should be watered frequently but sparingly. In the case of small seeds, water should not be placed in the saucer more frequently than is absolutely necessary, and after a good watering on the surface, the water in the saucer should be poured off. In order to secure a constant and equable degree of moisture to lightly covered seeds, they should be covered, until they germinate, with a bell-glass, or with a pane of glass, or with a piece of thin paper. In using the glass or paper there should be a space of at least one-third of an inch between it and the surface of the soil in the pot. The bell-glasses or panes of glass should be removed every day and cleaned. The state of the soil can then be examined, and water given if required. As soon as the plants begin to come up, the glass coverings should be removed altogether. The daily removal of the glass for the purpose of cleaning is also useful in admitting a fresh supply of air, and preventing the drip of condensed moisture. To the tyro in plant culture we strongly recommend, when he is in doubt, either not to cover at all or only very lightly, and for this purpose a piece of thin paper is the best. He must remember to remove it altogether as soon as the young plants appear. Too thick a covering often hinders small but perfectly fresh and sound seeds from germinating.—*Dr. Regel.*

(To be continued.)

TABLE DECORATIONS.

THERE is no better judge of these than Mr. Thomson, and I think he will agree with me that it is equally as difficult for parties to get up good tables as it is for judges to arrive at proper decisions respecting them. In the first place, parties who get up a table have no chance of realising that perfection which a good house steward can effect, after a little consideration as to the number of lights, amount of fruit, sweets, &c. These all combine to make a whole that a competitor for a prize is deficient in, and this filling in can only be done by a very practised eye. Again, there is the difficulty of variety. It is puzzling to effect a change, and if table decoration is real, as it is with us, it means flowers, &c., at every meal. We have to study to prevent sameness. We could pass a table without fruit, but not one

without flowers; and this demand for variety suggested the idea of putting pots under the table, and using at first some beautiful standard azaleas, fuchsias, &c.; and, notwithstanding what has been said in the *Telegraph*, I know nothing more beautiful than a fine head of an azalea rising from the table so as to make a perfect little mound of bloom without any unsightly vase or covered pot to mar the floral effect. A high palm also looks well. At the same time I do not think the first prize at Kensington came up to the mark, as the ferns were not improved by being put through the table. There is not the least necessity for lighting up exhibitions of table decorations, for any one in practice can tell in a moment what produces the best effect.

I must, after all my practice, agree with my noble employer in thinking that there is nothing better than flowers. Palms, Ferns, and Lycopods are all black by night, and should only be used for the side table. Nothing lightens up like flowers in low contrivances of different devices. I would not even have orchids, or any plants growing in pots; nothing scarcely but common English or alpine and herbaceous flowers—those little friends with which all are familiar. These add a cheerful harmony and charm to a table properly arranged that no ungainly orchid or other pot plant can ever give. At the same time, anyone conversant with the arrangement of a table would know how easy it is to put slips in; besides, most dining-tables are now made of common deal, which nobody sees.

J. FLEMING, Gardener to the Marquis of Westminster, Cliveden.

THE PROPAGATOR.

THE ART OF GRAFTING.

(Continued from p. 155.)

TERMINAL CLEFT-GRAFTING.

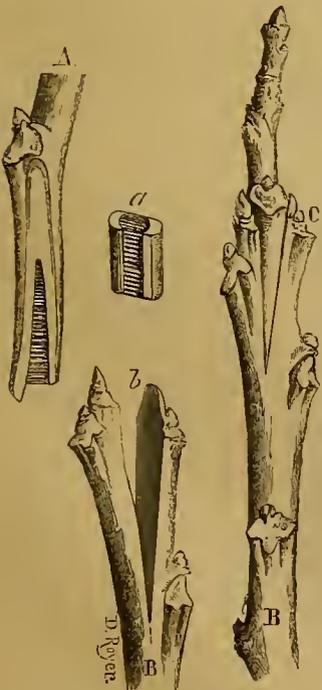
THE modes of cleft-grafting which have been described are only terminal in a certain sense. In those which follow, the grafts are more especially applied to the top of a stock not headed down, and are inserted with a terminal eye.

TERMINAL WOODY GRAFTING.—The season for performing this operation is in spring, before the flow of the sap. We have employed this method with the walnut-tree and the fir.

TERMINAL GRAFTING OF THE WALNUT-TREE.—The scion (A, see fig.) is cut with a regular double slope (a); the stock (B,

is cleft in the middle of its terminal bud, moderately, so that the introduction of the scion may complete it. The stock and scion are then bound firmly together with a bandage at the top and bottom of the cleft, and the tying is allowed to remain until the scion begins to sprout. At this period, the shoots of the stock are to be pinched, but not cut off altogether. They will continue to draw the sap towards the graft. This kind of grafting has succeeded better with us under glass than in the open air; however, we have thought it better to mention it, as it has succeeded with the air excluded, and also because it may be tried on other plants.

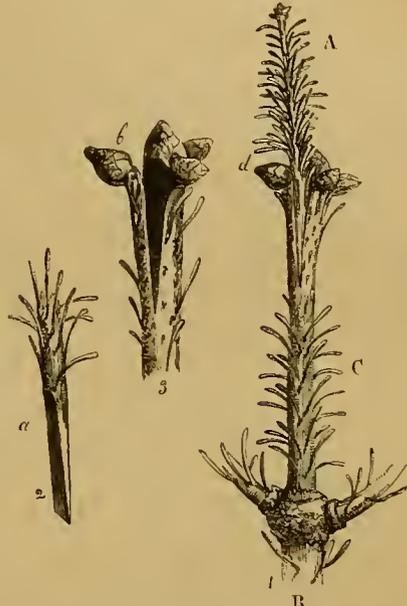
TERMINAL GRAFTING OF THE PINE.—The varieties of the Pine, Piceas, Abies, &c., of which the stem increases every year by a whorl of branches and a leading shoot not branched, may be propagated by means of this method, which is practised in the



Terminal Grafting of the Walnut Tree.

open air in April and May, when the buds of the Pine begin to swell. The scion (A), taken from the top of a branch, is a shoot of the preceding year crowned with its terminal buds. It is cut on

both sides in a slightly slanting direction, as at *a*, and introduced into the top of the shoot (c) of the stock (B) in a longitudinal cleft made between two buds of the crown at their junction near the central bud; this cleft may be partial or entire (*b*). The insertion having been made (as at *d*), it is bandaged with wool or cotton and covered with mastic; the graft is then surrounded with a leaf of paper, in order to preserve it, when it begins to sprout, from the action of the sun and hot winds. At the same time the shoots of the upper whorl of the stock, are cut to half their length; the slender ones may be bent downwards. The object of this precaution is to divert a larger supply of sap to the graft. No part of the



Terminal Grafting of the Pine.

stock except the upper whorl is to be thus cut. Even afterwards the branches of the stock must not be too closely pruned. If they extend too much, a moderate pinching in summer will suffice to check them. The stock may be grafted at any age, and either in the open air or under glass with the air excluded. The trees which result from this mode of grafting will have all the appearance of having been raised from seed. Of course, it will be better to graft them when young, if a longer enjoyment of their habit and foliage is desired. In the nurseries about Metz, this mode of grafting is successfully practised in the open air, in July and August, when the scion and the leading shoot of the stock are passing from the herbaceous to the woody state, and present sufficient consistence to allow of this mode of grafting being performed.

TERMINAL HERBACEOUS GRAFTING.—We have used this method chiefly with the pine, but we have every reason to believe that it will answer other members of the Conifer family equally well. When the sap first begins to flow in May and June, and the young shoots of the pine are already an inch or two long, and before the new leaves are developed, is the proper time for grafting. The scion (c) is one of these young shoots in an almost rudimentary state, with a bud at its extremity; it is taken from a branch of the parent tree, it does not matter whether from the top or the sides. It is cut with a sharp knife on both sides, in an even sloping direction. This must be carefully done, on account of the delicate texture of the wood. The stock is cut off at the top of the leading shoot, immediately below the group of terminal buds. The leaves around the top (B) are removed, except a few which are left to attract the flow of the sap. The cleft is made either right across



Terminal Herbaceous Grafting.

the top (B) are removed, except a few which are left to attract the flow of the sap. The cleft is made either right across

or partially, according to the difference between the diameter of the stock and that of the scion. The scion is inserted rather deeply into this cleft so that the top of the cut part may be a little below the level of the top of the stock, and the bark should coincide with that of the stock on one side at least. A prop or a stake will be necessary to support the graft for a year or two. It is bandaged with wool, and the cuts exposed to the air must be covered with mastic; a paper cap is placed over the graft and kept there until the scion has begun to sprout. The stock will not afterwards require any clipping, disbudding, or pinching of its branches. The Forest of Fontainebleau affords examples of *Pinus Laricio* which were thus grafted on *Pinus sylvestris* forty years ago, and the trees are as fine as if they had been raised from seed. For twenty years past, M. Jules Barotte, of Brachay (Haute-Marne) has converted by this method thousands of *Pinus sylvestris* into *P. austriaca* and *P. Laricio*. He operates in the open ground or in the forest, grafts the subjects on the young leading shoots at the height of two or three feet from the ground, and never covers his grafts with paper caps, as they do in the nurseries.—*C. Baltet.*

(To be continued.)

Lilies from Seed.—My practice is to sow the seeds as soon as ripe in frames or in the open ground in boxes with open bottoms, across which a few laths are nailed. The boxes being plunged in the soil, these laths prevent their being thrown out by the frost, allow the moisture to rise from below, (thus obviating the necessity of watering, which is liable in this instance to do more injury than good), permit the roots to feed in the fertile soil placed under the boxes, and hold in place the bulbs in the boxes, if it is ever necessary to move them. The frames or boxes are supplied with light sandy soil, with which leaf mould or peat has been freely mixed. Though a few plants may appear during the next summer after sowing, I do not look for the seed to start till the second spring, eighteen or twenty months from sowing. The little bulbs should remain undisturbed two years or more.—*C. G. P.*

NOTES AND QUESTIONS ON PROPAGATING.

Striking Cuttings in Wardian Cases.—It is probably not generally known that cuttings of many kinds of plants not usually increased with facility by amateurs, may be rooted easily in a Wardian case in the sitting-room. I have just seen several of the simplest kinds of these cases filled with nicely rooted little plants of Conifers, Hollies, and various other choice evergreens, in Mr. Cook's studio, at Glen Andrew.—*W. R.*

Propagating the Dieffenbachia.—The practice generally adopted is to cut down those plants that have become too tall to look pleasing, using the top for a cutting, and dividing the stem into as many parts as there are joints; these joints are then inserted in sand or other light material, allowing them the advantage of a gentle bottom heat. This, though a successful method, is, as far as certainty and the procuring of strong plants are concerned, superseded by the following:—Having ripened the plants well in autumn, and allowed them a little rest in winter, start them towards the end of February in bottom heat, with an atmospheric temperature of 60° or 65°, and supply them with water rather carefully at first, but copiously when they show signs of active growth. As soon as they have fairly started, take off the top and use it as a cutting, still retaining the old stump as it was. The ascending sap finding itself thus checked, stimulates the dormant eyes and forces the uppermost one to push forward and take the lead. This, when sufficiently advanced, should be taken off the parent stump, retaining at its base a piece of the old wood. By inserting this, and treating it as a cutting, a new plant is produced much sooner, and of a stronger constitution, than by the ordinary method. Nor is the old stem then rendered useless, for, finding itself deprived of its top shoot, the next bud takes the lead; this in its turn is treated as its predecessor, until every eye upon the stem is utilized.

Cleaning Walks with Acids.—There seems to be some misunderstanding on the subject of cleaning walks by means of chemicals, and of acids in particular. One correspondent recommends hydrochloric acid, another sulphuric. Now neither of these need be used in a pure state—indeed it is wasteful to do so. In using pure hydrochloric acid, there is a danger of killing the foliage in the vicinity by its strong fumes, which are the most deadly to vegetation of any known, but this danger is over in an hour when the acid is neutralised by its distribution in the gravel. Its cost is greater than that of sulphuric acid, and it will not act well if diluted with more than five or six times its weight of water. Sulphuric acid, on the contrary, makes no fumes, and therefore will not harm in that way; it is a stronger acid and will bear three times as much diluting without losing its pungency; it is also cheaper, being obtainable for about 1d. or 1½d. per pound by the carboy of one cwt. Spring is the best time to apply it, also dry weather, else it gets washed away. Dilute it with fifteen or twenty times its weight of water, and lay on just enough to wet the surface, being careful not to splash it.—*A. DAWSON.*

KEW GARDENS AND THEIR MANAGEMENT.

Your article of the 10th inst., in reference to these gardens, was as full of truth as many we have read lately in other journals have been of error. The purpose of Kew should be that of introducing new plants, and testing their value, teaching the public in matters horticultural, and exhibiting for their instruction specimens of all classes of plants, be they beautiful or not so. Now is Kew doing this? Let us see; in the Botanic Gardens, properly so called, instead of finding specimens of all kinds of hardy shrubs, we find large beds of common Laurel and Rhododendrons. The collections are put out in the pleasure grounds; in the houses we find plants exhibited so as to show the public how they do not grow. Where are the interesting Pitcher plants, like those one sees in such luxuriance at Messrs. Veitch's? Where are the grand old plants of Banksias and Dryandras that used to be a feature of Kew? If we look for a specimen of rockwork, we find a slight modification of a stone wall. If we look for beauty of landscape, we find vistas large and vistas small, giving the place the appearance of having been laid out for the convenience of rabbit shooters. If we look for examples of tree planting, we find thousands of small ones planted under the dense shade of large Beeches, disfiguring the scene, and doomed to die or grow like hop-poles. Is this scientific? It has long been known that trees planted under the shade of others will never do any good; therefore such planting cannot be an experiment. It has been said that the late and present director have brought the gardens to what they are, which is quite true; though it appears that the object of the present one is to undo all that the late one did; for it is notorious that he has been cutting down trees and shrubs, or transplanting them, until we have the majority of the trees of the Pinetum moved. And where are they? Echo answers "Where are they?" Most of the fine shrubs which used to adorn the Botanic Gardens have been grubbed up, burnt, and replaced by a quantity of common Laurels, &c. We have seen a vain attempt to make a lake out of a duck-pond, though why a lake should be wanted within a few yards of one of the finest bends in the whole length of the River Thames has been a matter of surprise to many. We have heard much about "scientific" management lately; in fact it has almost become a party cry. Well, what does it mean, this great word Science? Here we have it: "Knowledge reduced to a system;" and truly it is. But we have had knowledge reduced to system long enough; it is now quite time that systems were reduced to knowledge. We have had many gardeners writing lately in favour of Kew continuing under the old system of management; but what would one of these say if he was told by a man who had never looked after a house of plants in his life, when to water his plants; or find himself told to keep a house of Ferns dry as a bone for a month, the same with stove plants, and hard-wooded Australian plants (even when standing over hot pipes), and his men threatened with dismissal if they gave them water? Or having to raise seedlings and cuttings of all sorts of tender plants without anything but clayey loam and sand to pot them in for three months, and on speaking about it to be told by such a person that that description of soil was best for them (he being held responsible for their culture)? Again, let him go into a house of plants for which he was held responsible, and finding many suffering from want of water, on mentioning it to his assistant, find he had been ordered by the director, or his head foreman (who at Kew is called curator), to keep them dry? How would these writers like such a position? And yet this is what is done at Kew, and what they unconsciously wish to be continued; but what no friend to Kew can possibly wish to see maintained for a single day.

J. CROUCHER, (late General Indoor Foreman, at Kew).

ALLOTMENT GARDENS.

STATEMENTS have been made that the number of professional gardeners exceeds seventy-five thousand, but for one professional gardener there must be a hundred amateurs. Those who, like myself, have visited some of the suburbs of manufacturing towns, can alone form an idea of the vast numbers who, recognizing the truth of the old saying "change of work is a holiday," rush from their daily employment to their little gardens, and often work harder there than they have done all day. It has been asserted in a garden paper that there are no less than five thousand gardens round Nottingham, and we may assume it is true. If we could but calculate the number of hours thus rescued from the public-house, how anxious we should be to afford, round every town and village in the kingdom, the means of employing every poor man's leisure hours in this way. It has been said property has its rights; but it has also its duties, and one of its duties is that of studying the welfare of its dependents. I should like to see some of the many spare acres divided into allotments, to be held by working men, not at an extortionate rent. Round Sheffield the price of a bit of garden is

enormous, and there are rich noblemen who could afford to lower the price by devoting some land to allotments at the current farming rent, and thus employ men who have nothing to do in their spare hours, and rush anywhere for society. I have been told that land in the neighbourhood of Sheffield lets at four shillings and sixpence the square rod, of which there are one hundred and sixty in an acre. That would average thirty-six pounds per acre, amounting to exclusion, except for the better class of tradesmen. The poor are as completely shut out as if there was no land, yet thousands of allotments could be made, and much of the time now lost in the public-house would be saved. Let me plead for the industrious classes with those wealthy landowners in the hope that they will speedily let some portion of their estates for garden purposes. Depend on it an awful responsibility rests on those who can redeem the idler, and improve the moral and social condition of the poor, and neglect to do it. Now I know, from over forty years' experience, that allotments and prize shows for exhibiting the produce, have so improved the population in some towns that persons, like myself, who had not visited them for several years, and knew them only at their worst, considered the change next to a miracle. In 1851, I was gardener at Pusey House, in Berkshire. My employer sent over four hundred of his cottage tenants to the Great Exhibition. Most of these poor cottagers had a quarter of an acre of land. I hope there will be more of this consideration for the poor; that the rich will see the necessity of placing in the poor man's way the means of spending his leisure hours profitably; for it is a hard case that men should have no choice between solitary idleness and the excitement and expense of the alehouse.

Notting Hill.

WILLIAM GILES.

GARDENING ROUND LONDON.

(DURING THE PRESENT WEEK.)

BY OUR SPECIAL REPORTER.

PRIVATE GARDENS.

Conservatories.—Camellias, the finer kinds of Rhododendron, Orange trees, and cool-house Palms, are being thoroughly washed, so as to set them right for autumn and winter. Tree Ferns are now being watered freely, especially such as are in borders, care being taken, however, not to give so much as would render the drainage imperfect. Cannas in pots, when placed, as they begin to flower, amongst evergreen shrubs, produce a cheerful effect, and the presence of Japan and other Lilies also greatly aids indoor decoration. Gladioli grown and bloomed in pots are also used advantageously in the same way. Vallotas, when placed along the fronts of conservatory borders as they come into bloom, and plunged so as to hide the pots, form nice companions to *Moræa iridioides*, Hydrangeas, African Lilies, dwarf Fuchsias, and such plants as are commonly used for border decoration. Where there are large Palms, Bromeliaceous plants may often be seen on their stems, set in moist peat, resting on the base of some decayed leaf-stalk. These, when in good condition and well supplied with moisture, give the Palm stems a dressy appearance. In shaggy-stemmed sorts, such as those belonging to the genus *Phoenix*, no soil is used, and yet many Bromeliaceous plants there well if kept moist. Herbaceous kinds of Begonia, such as *Sedeni*, *intermedia*, *Bolivienensis*, *maritima*, and others, form lovely objects at present in conservatories. These occupy positions well sheltered, cold draughts being detrimental to them.

Stoves.—Stove plants which are growing freely are now encouraged to ripen their wood, for on that depends their future welfare. *Eucharis amazonica* is now producing flower-spikes in abundance; a smart bottom-heat, a brisk atmospheric temperature, plenty of moisture, and open rich material to grow in, are what it delights in, and it always blooms best when the pots or tubs in which it is grown are well filled with young and healthy roots. *Pentas carnea* also forms a conspicuous plant in stoves at present; its only fault is being subject to mealy bug, which insinuates itself amongst its flower buds as it does amongst those of *Ixoras*, and the only means of eradicating it is patient washing and brushing it off, using for the purpose water in which a little soft soap has been dissolved. Aquatic plants, such as *Nymphaea cærulea*, *gigantea*, and *devoniensis*, and *Nelumbium speciosum* now require a little attention. The tank in which they are grown must never be filled up with anything but tepid water. The *Nelumbium* requires a less depth of water than the *Nymphaeas*, but a greater depth and extent of soil; indeed, it does best when planted in a compost of three parts good turfy loam and one of leaf-mould with some sharp sand. The *Nymphaeas* are generally kept in pots placed on inverted pots in the bottom of the tank. Amongst stove creepers none are more effective at present than *Cissus discolor*, especially when grown in a warm, moist, partially shaded house. As finely coloured leaves as I ever saw on

this *Cissus* were produced on a plant in a fernery, in which the roots were so situated as to receive a little bottom heat. Thus circumstanced, it keeps in beautiful condition summer and winter, and in every succeeding summer it sends forth its shoots more vigorously than before. As a companion to ferns, *Philodendron Lindenii* is a suitable plant, for when a little shaded it rambles over mossy stones, and its fine glossy leaves are very effective. *Marcgravia*, too, cling to wood or stone, and thrive luxuriantly in moist heat, just as well as the *Ivies* do on old walls. With these might also be associated the *Æschynanthus*, the different kinds of which are very pretty.

The Flower Garden.—The moist season which we have had has induced plants to make fine growth, but as regards display of bloom it is not so good as usual, and it has also been a good deal damaged by rains. On the other hand, herbaceous plants are better this year than they have been for many years past. Phloxes especially are particularly fine. Pentstemons have also been unexceptionally good, but they are now almost over. On these two classes of plants the rain has had no ill effects. Conspicuous among other fine things is *Amarantus salicifolius*, now a lovely object; it is beginning to assume a colour somewhat similar to that of *Alternanthera amœna* when grown in poor soil; high colouring, indeed, can scarcely be expected in rich ground in which the plants are stimulated into unusually robust growth. Other *Amarantuses* also form conspicuous objects, the kinds called bicolor and tricolor being useful as ground-work to Castor-oil plants, and other plants of similar appearance; they also make nice little beds of themselves. *A. melancholicus* when pinched in or pegged down makes an excellent dark panel: even *Love-lies-bleeding*, when well grown and mixed with sub-tropical plants, has a good appearance, its long pendent flower-spikes being always attractive. *Alternantheras* this year are particularly fine; they always grow and colour best when a little peat is mixed with the soil. The best kinds are *amœna*, *magnifica*, *paronychioides*, and *versicolor*. *Coleus Verschaffeltii* is another useful dark-leaved plant, which gives much more satisfaction when a little peat soil is mixed with the compost in which it is planted. Flower-spikes of the *Yuccas*, as they become decayed, should be removed. The prunings of the variegated *Thyme* and similar plants are being used for purposes of propagation. The arrangement of bedding plants for next year is being made, and the plants to be used decided upon. This is a matter which is much more easily settled now than at any other time. Where trees and shrubs are intended to be transplanted, their places are now marked out, and any other alterations to be done in the winter months are being decided upon.

Indoor Fruit Department.—The leaves of Vines in the earliest houses are now assuming a yellowish tinge, and the wood is quite hard and well browned. Vines in pots are now set as near the glass as possible, in order to encourage them to ripen. Melons that were planted a few weeks ago are encouraged to make growth by means of a brisk bottom heat. Cucumber beds are kept well watered, and if necessary, top-dressed. By means of steady and judicious thinning, the bearing season may be considerably lengthened. Tomatoes are kept in houses or pits as near the glass as possible, so as to get their fruit well ripened. Should the roots become pot-bound, a little manure water is given.

Mushroom Beds.—These are being formed, both in houses set apart for them and in out-houses or sheds that can be kept dark, and where the temperature will never be likely to fall below 45° nor rise above 70°. In making up the beds, the rankest of the litter is separated from the rest and is placed aside, so that only the shortest litter is kept for the bed, and with this a little light soil is mixed. The whole is then spread out on the floor of a dry shed, and added to as circumstances permit, keeping the whole in a mild fermenting condition by frequent turnings. As soon as sufficient manure is got together to form the beds, they are made mostly on the flat system, that is, not in the form of a ridge; and as soon as the strong heat generated declines to about 80° or 85°, the beds may be safely spawned. Those made in the end of last month are being spawned now.

Outdoor Fruit and Kitchen Garden Department.—Lime is being strewed over the Cabbage beds sown some days since. Borecole, and the latest crops of Broccoli, are being planted out on ground from which Potatoes have been lifted. A few Cardoons are being bound round with hay or straw, and earthed up for blanching. The first main crop of Celery is being earthed up. In doing this a piece of matting is tied rather loosely round the leaves, so as to keep the soil from getting into the hearts of the plants, and then the earth is worked round the plants, not giving too much at once. Another way, and that usually adopted where two or three rows are grown in each ridge, is to have a man or boy to hold up the leaves of each plant with one hand, and with the other to work the soil around the stems. This is not nearly so tedious an operation as might be imagined; a

little lime is dusted over and about the plants, to prevent damage from slugs. The suckers, as they appear about the necks of Celeriac, are removed. Late sowings of Turnips are being thinned. A bed of Radishes, where not done earlier, is being sown. Garlic and Shallots are taken up and dried in the sun, taking care to protect them from rain. The main sowing of Onions for standing through the winter has been made this week in early localities, or where the soil is light; the main sowing, when the soil is inclined to be cold or heavy, was made on or about the first of the previous week. A piece of ground is being got ready for the last sowing of Spinach. A sowing of Cauliflowers where they can be protected throughout the winter has been made. Endive is being planted out on warm sunny slopes; plants fit for use are tied up or covered so as to cause them to blanch. American Cress and Corn Salad are sown for winter use. As soon as the seeds of Angelica are ripe, they are also sown. Small sowings of Mustard and Cress continue to be made at short intervals.

NURSERIES.

Indoor Department.—In nurseries, plants of which a good stock is required are grown on in winter as well as in summer, potted and propagated as opportunity affords, and maintained in activity by means of a strong moist heat compared with that commonly given to plants during the dull season. The propagation of bedding plants occupies considerable attention at present. Young plants of *Primula sinensis* are being potted into three-inch pots, using a compost of good yellow loam two parts, and one of leaf-mould or well decayed manure, and a fair quantity of sharp river sand. The plants are then placed in cool airy pits, the sashes of which are kept shut for a few days, and the plants are also closely shaded. Seedlings of *Primula japonica* are being shifted, some from the seed-pans into three-inch pots, and others, earlier shifted, are being repotted into forty-eight-sized pots and placed on beds of ashes out of doors. Auriculas are being repotted and placed in frames with a north aspect. Petunias are being increased from cuttings in gentle heat, and as soon as rooted are shifted singly into small pots and placed on raised boards in cold frames. Pinks for forcing are being potted; cuttings are freely exposed to air, but shaded from too bright sunshine. Neapolitan Violets are being lifted and potted for forcing. Single red Camellias are being propagated by means of cuttings in a very gentle heat; these will be hereafter used for stocks for grafting on. The grafting of Camellias and different kinds of Citrons and Daphnes is being done in pits and the plants are kept under hand-lights and well shaded. Conifers, in the way of the finer kinds of *Thuja*s, *Abies*, &c., are being increased by means of cuttings made either entirely of the young wood or of the young wood with a heel of old wood attached to it. They are then inserted in six-inch pots filled with light peaty soil, nearly half an inch of the surface being pure silver sand. These pots are then plunged in cocoa-nut fibre under hand-lights, which are kept in cool pits and densely shaded. Roses are being propagated by means of cuttings in frames or under hand-lights in a warm border. Clematises that have been layered are being potted, as are also the rooted pieces of layered Japanese Maples.

SOCIETIES, EXHIBITIONS, &c.

ROYAL HORTICULTURAL SOCIETY.

(AUGUST 21st.)

At this meeting Gladioli formed the chief feature, and to some of the new kinds exhibited first-class certificates were awarded, the sorts to which they were given being a decided improvement on kinds already in cultivation. Many old sorts were also shown in fine condition, more particularly Norma, which in one instance we do not remember ever seeing finer. Amongst the best of the others were Horace Vernet, Virgile, Meyerheer, Adolphe Broignart, Lapepède, Orpheus, John Standish, Sulphureus, Mathilde de Landevoisen, and M. Desportes. The principal exhibitors in this class were Messrs. J. Standish & Co., Ascot; Messrs. Kelway & Son, Langport, Somerset; and Mr. J. Douglas, Loxford Hall, Ilford. Hollyhocks were also very fine, both in the form of cut flowers and spikes. Some from Lord Hawke were excellent; as was also a large collection from Mr. Chater, Saffron Walden. There was a stand of as fine double Zinnia blooms from Mr. J. Chater, Gonville Nurseries, Cambridge, as we have seen. This was deservedly awarded a cultural commendation. The same exhibitor showed some stands of very large-bloomed Asters. Cut spikes of Phloxes were exhibited, but they were somewhat past their best; still, a stand from Mr. J. Chater contained some very fine sorts. The best, however, came from Mr. R. Parker, Tooting, who also showed a dozen herbaceous plants in pots. A basket of *Vallota purpurea*, lighter in colour than we commonly see it, was shown by Mr. Standish, who also exhibited that useful little summer-blooming plant *Bouvardia Vreelandii*, and *Nerine Fothergilli*, finely in flower. By far the best feature of the show was, however, the fine Nepenthes *Rafflesiana* from Mr. T. Baines, of Southgate, referred to in another column.

This was shown in a pot raised some distance above the stage, so as to permit the pitchers to hang at full length. Mr. Baines says that a very common cause of failure in growing this plant is keeping it in too moist and stagnant an atmosphere. It loves heat and moisture, but at the same time it must have abundance of light and a free circulation of air. He says young plants always form pitchers larger and better than old ones, and that such a place as a Cucumber pit, where heat and air are always at command, and the plants kept near the glass and well watered, is as good a place for this plant as any other that could be selected. There was a small collection of Orchids from Messrs. Veitch & Son, Chelsea. Although late in the season, *Phalænopsis amabilis* and *Odontoglossum Alexandræ* were very fine; there were also the beautiful little *Mesospidium vulcanicum*, a lovely-flowered specimen of *Dendrobium chrysotes*, and a few others. The same firm also showed some exceedingly well-coloured plants of *Amarantus salicifolius*, that had been grown for the last ten weeks in the open air. From the Society's Garden at Chiswick likewise came examples of the same plant, that had been grown in pots out of doors, but which were not so well coloured as those from Chelsea. This fine *Amaranth* never colours so well indoors as out; poor soil, and free exposure to air are what it requires in order to have it in perfection. Of Fruits and Vegetables there were but few; nor did they present anything new. French Beans and Runner Beans were good.

First-class Certificates.—Certificates were awarded to *Gladiolus Helorus*, *Osci*, *Lycoris*, *Lamirus*, and *Orchus*, from Messrs. Kelway & Son.

To *Gladiolus Rosy Morn*, *Gwendoline Morgan*, and *Day Dream*, from Mr. J. Douglas, Loxford Hall, Ilford.

To *Dahlia James Service*, a dark brown excellent flower; *Rev. J. M. Camm*, a good striped kind, the ground colour being yellow striped with brown; and to *Ne plus ultra*, a fine black-coloured sort, all from Mr. J. Keynes, Salisbury.

To *Lælia elegans Marshallæ*, a purple-coloured kind, from Mr. Wilson, gardener to W. Marshall, Esq., Enfield.

To *Phlox Heynholdii*, a dwarf orange-red flowered kind, a good addition to varieties of *P. Drummondii*, from the Society's Garden, Chiswick.

To *Fuchsia Delight*, the corolla of which is large and white, the tube and sepals deep red.

To *Lilium tigrinum*, var. *Lishmauni*, a fine form of Tiger Lily, with splendidly spotted petals. Though in several respects distinct from the ordinary Tiger Lily, it is, however, nothing more than a mere variety of that kind.

To Duke of Buccleuch Grape, exhibited at the last Meeting by Mr. Wm. Thomson, Clovenfords, Galashiels.

The New Grape, Duke of Buccleuch.—Mr. Barron read the following report of his investigation of this Grape, raised by Mr. Thomson:—"In accordance with instructions, I visited Clovenfords last week and saw this Vine growing there. Mr. Thomson has it planted pretty extensively—1st, twenty-two Vines in one house, at six feet apart, two rods to each Vine, the rest of the house being filled with Black Hamburg, Golden Champion, and other sorts; 2nd, about forty Vines on either side of a span-roofed house at nine feet apart, three rods to each Vine, the rest of the house being filled with Muscats, Golden Champion, &c. The whole of these Vines were planted in the autumn of 1870. The greater portion of the crop (300 lbs.), had been cut previous to my visit. There were still, however, about 250 bunches hanging, which enabled me to arrive at a pretty good idea of its bearing qualities. There was a singular uniformity in the appearance of the whole, both as regards the growth of the plants, general productiveness, size, colour, and general appearance of the bunches and berries. In growth it somewhat resembles Canon Hall Muscat, Mill Hill Hamburg, and Golden Champion, the shoots being rather gross, and in some instances not ripening berries thoroughly. Generally, however, the wood was well ripened, the leading shoots being very strong and thoroughly ripened, of about the thickness of one's thumb. I could detect no spot or other blemish on the berries; whereas the Golden Champion alongside, although large and well-grown, was much spotted. As to ripening, in comparison with the Black Hamburg grown in the same house under the same circumstances, it was much earlier—evidently some weeks. Few of the Hamburgs were ripe or fit to cut, whereas the most of the Duke had been cut and sent to market a month previously. The Hamburgs were, however, overcropped, which tends to retard the ripening. The Muscats under the same treatment had not begun to colour, whilst the Duke was dead ripe; and at Drumlanrig, the Muscats being ripe, the Duke was quite overripe and spoiled. Golden Champion, also, by comparison, was quite green and acid. At Clovenfords and at Drumlanrig each Vine of this variety seemed to have fruited as freely as a Black Hamburg, one bunch to each spur; the bunches being of a fair average size of from one to two pounds each, and some larger. Grafted on the Muscat it did not seem to do so well; in one instance the fruit was much greener and later, and in another it had not set regularly, some berries being enormously large, and the rest small. The Duke of Buccleuch is a Grape which will evidently not keep long after being ripe, being thin-skinned. It is extremely pleasant to eat, the flesh tender and juicy, with a rich sparkling acidity, somewhat of the Hamburg character. The berries are enormously large, round or oblate like the Dutch Hamburg, and have rarely more than two seeds in each. I should describe it as a very valuable summer Grape."

A CONVERSATION at Holland House turning upon first love, Tom Moore compared it to a potato "because it shoots from the eyes." "Or rather (exclaimed Byron), because it becomes all the less by pairing."

THE GARDEN.

—o—o—o—
 "This is an art

Which does mend nature: change it rather: but
 THE ART ITSELF IS NATURE."—*Shakespeare.*

BATTERSEA PARK IN 1872.

LOVERS of flower gardening look to Battersea Park with somewhat of the interest that lovers of pictures feel in the Academy. This has been so ever since Mr. Gibson introduced the stately foliage-plants into the flower garden there, and it is likely to continue, we are glad to say, as long as his successor remains at Battersea. It might occur to some that the very remarkable gardening there would suffer on its introducer being called away to take charge of another park. We are glad to say that, so far from this being the case, improvement is going on rapidly; that the garden never presented more novelty than at the present time, and that, notwithstanding the peculiarly late and severe season, the foliage-plants are in fine condition. We moreover noticed certain important changes, which appeared to us to lead in the true direction. In old times, one of the least agreeable features of the park were the tedious interminable lines of *Stachys* and red *Pelargoniums*, which fringed every shrubbery and plantation with a formal glare. Mr. Rogers has, we think very judiciously, done away with a great many of these, has broken the margins of the shrubberies, where too formal, by projecting shrubs and plants of some interest and character here and there, and by causing the turf to creep over the wide formal borders and under the shrubs and trees. Most admirable, however, among the changes is that of reducing the over-lavish effect produced by too great a profusion of beds in one place. A good example of this may be seen at "The Cottage," which was always agreeably surrounded by flowers, but which, in consequence of a judicious reduction of the beds, is prettier than ever this year. At the same place, and between each bed of flowers, may be noticed a little group of Palms, *Dracænas*, &c., plunged in the grass in the most quaint and charming way. And this reminds us that the in every way admirable system of grouping and isolating remarkable looking plants on the turf, is carried out by Mr. Rogers to a very large extent, and with a taste that we have never seen surpassed in gardens. Palms, *Yuccas*, and succulents are neatly plunged in the closely-shaven turf in natural looking groups, so that they at once strike the eye, while they are fully exposed to the sun, and are not shaded or otherwise injured by neighbouring subjects. In the case of all hardy plants, this system will be found an immense improvement, as it not only shows the plants to the best advantage, but gives them a chance of growing to their fullest perfection, which they never had under the old or common system of huddling everything together in a shrubbery or mixed border. It also admits of an infinite variety in arrangement. The mixed system has also been introduced with a very happy effect. At one time, and indeed mostly as yet, the beds of fine-leaved plants were of one kind, with perhaps a belt or edging of some other fine-leaved subject. While such beds certainly relieve masses of bright colour, it is a great mistake to suppose that they were any more than a step on the way to a more beautiful system, and that is the mixed one. Not anything like the mixed border, however, but artistic groupings of fine-leaved and flowering plants so combined as to "bring out," so to speak, each other's beauty. A beginning only has been made in this great improvement at Battersea, but every step taken in the matter by Mr. Rogers proves its great merits. When we consider the various fine flowering plants, such as the Lillies, *Gladioli*, and *Dahlias*, that are well adapted for close association with the fine-leaved plants, it is easy to imagine what beautiful and infinitely varied results may be obtained in this way. Even in grouping the fine-leaved plants themselves, much may be done by the mixed system; one of the most admired beds at Battersea this season has the central group of *Cannas* surrounded and beautifully relieved by tall plants of the variegated *Maize*, and finished off with a few smaller subjects towards the

edge. Nothing can be neater than the succulent bedding at Battersea Park this year; still more effective and right in direction is the way in which little groups of quaint-looking succulents are boldly distributed on the turf in an irregular manner. The mosaic beds of dwarf *Alternantheras*, &c., are very neatly done, and when viewed close at hand suggest that much skill and pains have been bestowed upon them, but nothing more. A little way off they look like carpets, but carpets such as nobody has had the hardihood to offer for sale for many years past. But if they resembled the finest carpets ever woven by man they should, notwithstanding the Rev. Mr. Peach's opinion, not command our admiration. He who says, or thinks, that a garden should in any conceivable sense resemble any carpet yet seen, has still to learn in what consists the true pleasure of a garden—a simple but essential lesson that many a cottage garden teaches. The extensive and noble rock-garden made by Mr. Gibson has been well planted by Mr. Rogers, and a charming hardy fernery constructed near it, which, although planted last spring, is already quite a picture.

Having pointed out what seem to us improvements, it may not be amiss to indicate to the amateur visitor a few defects that he would do well not to copy—defects which it is very likely a few years more will see entirely removed. Most evident is the *embarras* of riches which occurs near the serpentine beds in the sub-tropical garden and in a few places along the walks which lead from it. The finest effects are weakened or neutralised by being multiplied without end. These serpentine beds themselves are quite out of place in such a sweetly natural looking garden as this is in many parts. To the long formal beds the same remark will apply. Some day will see us as anxious to conceal the shape of the beds as we are now proud to expose bold geometrical forms among them, and this because, in the best type of garden, every beauty depends on what is in the beds, but none whatever on the shape of the beds themselves. We could instance some beautiful garden scenes where there are no beds visible, and, though beds are indispensable, it is better in the naturally disposed garden to have them as simple in form as may be convenient. The sharp-edged banks and beds, mounted on stiff mounds, are also very objectionable as seen at Battersea. We miss in them the quiet and exquisite gradation of line, and the gentle moulding of the turf, which are seen so fully in such places as Berry Hill, Oak Lodge, Kensington, and at Mr. W. H. Smith's place at Henley-on-Thames. Many of these flaws it will take a good deal of time and labour to remove, and we merely point them out that visitors may not imitate them. On the whole, however, the gardening at Battersea is admirable, and highly instructive. The sub-tropical garden there may be safely pronounced the highest example of flower-gardening that exists at present, and, if nothing else came to the rescue, would suffice to break the back of the ugly monster, "Bedding-out." With such a noble example before us, those who have hitherto won some glory from outblazing their neighbours, and now grumble greatly because this glory is departing from them to those who better deserve it, may preach against the new movement and grumble on in vain. To Mr. Gibson, the very able, courteous, and modest superintendent of Hyde Park, must always belong the credit of creating Battersea Park, so to say; and, happily for the art of gardening, he has been succeeded by one who clearly sees, and steadily works for, its highest interests.

WHENCE COME THE FINEST ROSES?

THE Rev. Mr. Camm and Mr. Baker, two earnest and clever rosarians, having expressed their dissent from my opinion, that the best Roses, as a rule, were produced from the Briar, I have consulted the six most successful Rose growers of England, and have been favoured with their experience on the subject.

In the year 1871, Mr. George Paul, of the Old Nurseries, Cheshunt, took the principal prizes at the great Rose shows. In that year, he informs me, "the Roses from the Briar were the finest and largest." In the present summer, when his Manetti Roses were the best, he appeared only once in the

champion's place. In his reply to my inquiries, he adds, "the Briar mostly has the quality and finish on its side."

Mr. Cant, of Colechester, has this year distanced all competitors. He writes to me, "that on the average he cuts many more Roses from the Briar than from the Manetti. He gets some splendid blooms from the latter, but not so constantly as from the Briar."

Mr. Charles Turner, of Slough, says, "the Briar for permanent trees, Manetti for first year from buds."

Mr. Cranston speaks decidedly for the Manetti, but I have been in the beautiful nursery at King's Acre, near Hereford, and the Briar does not thrive there. His Manetti Roses in a favourable season are magnificent.

Mr. John Keynes, of Salisbury, says, "the Briar for early, the Manetti for late Roses." He adds, "that he has just seen some blooms from the seedling Briar, grown by Mr. Prince, of Oxford, that utterly flabbergasted him." If they astonished a rosarian like John Keynes, who showed some years ago at Birmingham the finest forty-eight roses I ever saw, what must they be?

The Rev. E. N. Pochin, than whom we have not a more reliable rosist, amateur or professional, writes—"As a rule, I agree with you, and should vote for the Briar. If soil equally good, Briar of course. Practically Briar best, where it will grow."

It only remains for me to repeat the conviction of more than twenty-five years' experience, that, as a rule, the British indigenous Briar is a better stock for Roses than the Italian Manetti, but that in certain soils and certain seasons, the latter is most successful. I advise all young rosarians to give both a trial, not of one summer only, but of two or three, and to decide by results. S. REYNOLDS HOLE.

I HAVE accepted Mr. Hole's challenge, and written to the gentlemen to whom he refers, and I am glad to say that there is at least an equal number who say that the Manetti produces equally good, if not better Roses, than the Briar.

Mr. Cant (who, by the way, wrote unsolicited to me to say that he considered my stands at the Crystal Palace to be the best he ever saw staged by an amateur), says that in his soil the Briar does best, and that he cuts, for the most part, his prize blooms from that stock, but there are times when the Manetti is the best, and he would be very sorry to be without either. Mr. Pochin, who has written me a most interesting letter, too long to quote, considers that, generally speaking, Mr. Hole's statement that the superiority of maiden Briar blooms is correct, but of course (he adds) it is not a fair question, as all depends upon the soil, but if the conditions are the same in twelve different soils, the Briar will have the advantage in some places, and the Manetti in others.

Mr. George Paul says, the maiden blooms of Manetti are larger than those of the Briar, but the average quality of Briar blooms is, when they are well done, finer.

And now, Sir, for the other side.

Mr. Keynes, of Salisbury, says, the maiden bloom on the Manetti is equal, and in many cases superior, to that of the Briar.

Mr. Cranston writes me word to this effect:—"I have always maintained, and ever shall, that the finest blooms are to be obtained from Manetti, with, however, a few exceptions. Some sorts will not bloom well from maiden plants, these are best on the Briar and better still from one year cut back plants, on the Briar." Mr. Baker, of Heavitree (who in my opinion is second to none as a judge and cultivator of the Rose, who has supported my opinion in your last issue), is all for the Manetti. So that there are three who say decidedly the Manetti is as good, if not better, than the Briar; so Mr. Hole need not in his next edition say unreservedly the maiden blooms of the Briar are superior to those of the Manetti.

I may add that Mr. W. H. Radclyffe is decidedly of the opinion that the Manetti is superior to the Briar as a stock.

Monkton Wyld, Charnmouth. JOHN B. M. CLAMM.

Advices from Bordeaux state that the vintage, which seems to be considered of average quality, has been more abundant than at any time during the past ten or eleven years. But it has yet to face the weather until October.

NOTES OF THE WEEK.

— ROUNDHAY PARK, Leeds, is to be opened by Prince Arthur on the 19th of September.

— THE sub-tropical garden in Battersea Park is now in full beauty, and will, we hope, remain so for at least another month. We however advise all who wish to see it to do so as soon as convenient. It was never better worthy of a visit than at present.

— WE learn from Mr. F. Lane that the Midresfield Court Grape, as grown at Latimers, the seat of Lord Chesham, proves itself in every way a noble fruit, the bunches being perfect both as regards size, colour, and bloom, and the flavour unsurpassed. This is quite our own opinion of this grape.

— A CURIOUS fact with reference to Tomatoes has been pointed out to us by Mr. Spinks, foreman in the Royal Horticultural Society's Garden at Chiswick. It is that those planted near some diseased Potatoes seem touched with the disease, while others, in a part of the grounds where there are no Potatoes, are quite free from it.

— AN Aldon Fruit Factory has been established at Fowler, Adams County, Ill. The building is described by *The Western Agriculturist* as 36 feet by 74 feet, four stories besides the basement, three evaporators, and a capacity for drying 400 to 500 bushels of fruit or vegetables per day. This will give some idea of the scale on which fruit is dried in America.

— LOVERS of Gladioli should now pay Messrs. Kelway's grounds at Langport, Somerset, a visit. Their general collection of these showy flowers is in full bloom, and they have also in addition numerous seedlings in blossom, an inspection of which must necessarily be interesting. Their grounds may be seen any time between the 1st and 20th of next month, Sundays excepted.

— MR. C. M. PALMER, the founder of the prosperity of Jarrow, has announced his intention to provide a public park and recreation ground for that growing town so closely connected with his commercial career. This is good news for the mining population of Jarrow, who during their work hours are so surrounded and encompassed with smoke and soot that a green field must be a perfect paradise to them.

— SAXIFRAGA PELTATA, a distinct and rare Saxifrage, is now in flower at the Halo Farm Nurseries, Tottenham. It belongs to the Crassifolia, or large-leaved section. The flowers are rose-coloured, and judging from present appearances the plant does not present any very noticeable feature, but it is said that when well established it has an unusually large leaf-development for a Saxifrage, the foliage often measuring two feet or more in diameter, and if such is the case it may form an attractive foliage plant.

— IN many parts of the London parks now (26th August) there is a worse than wintry aspect, from the number of lime trees that are shedding their leaves. In many parts the ground is littered with the leaves. These in dying do not assume their natural autumnal colour, but become of a peculiarly disagreeable foxy hue. Some of the trees are bare, and the bare trees are much more agreeable to the eye than those on which the diseased-looking foliage still rustles. The Aesculus, Alantus, and Plane are still quite fresh and beautiful.

— THE temporary embankment of the Thames facing Battersea Park, a deep slope with a rounded bank above, is in an unprotected and very dangerous state. Yesterday week two infants and a perambulator rolled down it into the river, but were saved by a good and bold swimmer who happened to be near. We trust the Office of Works will protect this long embankment at once; its dangerous state must be evident to everyone who lauds at the Battersea Park pier.

— WE have seldom enjoyed so pleasing an effect in a garden as may now be seen near Hyde Park Corner. Through some beds of hardy Azaleas and Rhododendrons, edged with Irish Ivy, are now peeping the blooms of *Lilium speciosum*. This happy result has been brought about by inserting a few blooms of this beautifully coloured and perfectly hardy Lily here and there in the beds, and the autumnal beauty of the beds is as perfect in its way as that of the early summer, when the American plants blossom. Such touches as this show the true gardener.

— THE finest hardy shrub with ornamental foliage at present in full beauty of leaf, is the Golden Elder, i.e., a variety of the common Elder, with leaves suffused with golden yellow. It is one of the most valuable gains that has ever been made to our shrubberies, and not second in importance to the popular variegated Aesculus. Unlike that plant it will succeed anywhere, and it retains its colours through all weathers. In a dwarf state it may be used in the flower garden. Beds of it may now be seen at Messrs. Henderson's, Wellington Nurseries, St. John's Wood.

— MUSHROOMS are said to be more abundant this season within the area of the Malverns, than they have been known for years.

— AN expedition to fix the exact locality of the Garden of Eden is spoken of in America.

— THE culture on a large scale of sugar beet is about to be commenced in the county of Cork by thoroughly experienced continental growers. We have great confidence that it will prove successful.

— MR. J. TALBOT CLIFTON, lord of the manor of Lytham, in Lancashire, has presented a beautiful park of several acres in extent to the inhabitants of that parish. The park is situated at the north end of the town, and is very convenient for both residents and visitors.

— IN a recent number we gave some account of the flower beds in the neighbourhood of the Palm-house at Kew. We would now direct attention to a long bed in front of Museum No. 2, which in our opinion is the most attractive bed in these gardens. This is planted on the mixed system, *i.e.*, foliage plants are mixed with flowering ones, and the effect is excellent.

— ONE of our native parasites, the *Cuscuta Epithymum* or lesser Dodder, is growing on a plant of *Clinanthus puniceus*, in the No. 4 house, or what is generally known as the conservatory, at Kew. Its white thread-like dependent stems look like a bunch of thread fastened to the plant, giving the latter an appearance something like that of the bearded trees of Texas.

— THE finest crop of Tomatoes we have seen in the open air is in Mr. Bagley's market garden at Turnham Green. They are grown in rows in the open field, tied to stakes, and closely pinched in to one stem, all the late-set young fruit and nearly all the side shoots and leaves being pinched off. We did not think this crop could be grown so well in a field, about London, particularly in such a season as this.

— THE various kinds of *Colchicum* are now just coming above the ground about London, where we are glad to see they are receiving more attention than they did a few years ago. Many of our readers fond of hardy bulbs would be interested to see these. There are good collections in the London district at Messrs. E. G. Henderson's, Wellington Road, St. John's Wood; at Messrs. Osborn's, of Fulham; at Mr. Wray's, at Tottenham; and at Mr. Parker's and Mr. Peter Barr's, of Tooting.

— SUMMER flowering *Chrysanthemums*, a dozen varieties or so of which have been in flower at Chiswick for some time, are worthy of more attention than they get with us. It is very likely that we shall some day see as brilliant hues among these as among the late-flowering kinds. And few accessions to our flower gardens would be more valuable than a race of *Chrysanthemums* which would flower well in the open air before the severe frosts and cold rains of late autumn set in.

— THE first prize of £20 for the best plan for laying out the Highfield estate as a public park for Ashton-under-Lyne and neighbourhood has been awarded to Mr. Alfred Underley, and the second prize, £10, has been adjudged to Mr. G. Gill, Stalybridge. Great preparations are being made to secure the success of a show about to be held on the grounds. There is every prospect of an early laying out of the ground. The sum already collected amounts to about £7,000, and no doubt is entertained as to the promoters obtaining the additional £3,000 necessary.

— AS there is some probability that the Central Railway Company, which some time ago obtained powers to construct a new street from Tottenham Court Road, through Leicester Square, to Charing Cross, may not carry out their powers, the Metropolitan Board of Works are contemplating some improvement in the square. A resolution has been passed that it be referred to the engineer and solicitor to report when the powers of the company will cease, and what steps they have taken towards carrying out the scheme, in order that the Board shall, if they think proper, carry out the improvement independently of the railway company.

— LANDSCAPE gardeners who may be engaged in planting boulevards in London, or in improving our streets and squares, would do well to eschew the common Horse Chestnut. In Paris this year, where the season has been as moist as in London, the leaves are scar and withered, and many of the trees are quite leafless, while *Ailantus glandulosa*, *Acer Negundo*, common *Acacia*, *Ehretia*, and *Catalpa-syringifolia* at this date are full of vigour, and the foliage as green as could be desired. These are all used in the boulevards. The scarlet Chestnut in groups in the Parc Monceau, and when planted singly in streets, &c., does much better than the common kind, and is much planted as a boulevard tree. *Thuja aurea*, *Cupressus Lawsoniana*, and *Cupressus macrocarpa* grow well about Paris, and some of them have attained a large size.

RIVERS'S NEW NECTARINES.

THERE is now in fine fruiting condition, in the Sawbridgeworth Nurseries, a new strain of seedling Nectarines of remarkable distinctness and of the finest quality and flavour. Some of these varieties have been named, others are not so as yet, and most of them have the blood and fine flavour of the Stanwick. They have all been raised by Mr. Thomas Rivers, and are likely to cause his name to be gratefully remembered by all lovers of gardens, even if he had done nought else to merit such distinction. We strongly advise all interested in high class fruit culture to see these Nectarines.

THE EMBELLISHMENT OF RAILWAY STATIONS.

NOR long since you published a paper on the decoration of railway stations. I read it with interest, and quite agree with the writer that much more might be done in this direction than we are accustomed to see. Let me tell you what I saw a few days ago at Yalding Station, on the Maidstone branch of the South-Eastern Railway. On the south side of the line is the up station, and between the booking office and a signal box there is a small but very charming flower garden, laid out by one of the porters, who has a great fondness for flowers, and carefully tended by him day by day. The space occupied by this garden is some twenty-four feet in length by ten in width; it is open to the line on the west side; on the east side is a boarded fence, about five feet in height. About two-thirds of the way up this fence there is a broad shelf, which held ten rows of plants in pots, and those comprised *Pelargoniums* of all kinds, *Fuchsias*, *Stocks*, very nicely done, and many other things evidencing circular skill of no common order. On the ground level are two circular beds edged with *Armeria alpina*; in the centre of one was a standard Hybrid Perpetual Rose, (General Jacquemont); on the other a similar plant of the tea-scented *Gloire de Dijon*; with various plants in flower filling up the beds. On the east and south sides there is a narrow border edged in the same way, and occupied by *Paucias*, *Potantius*, *Geraniums*, &c. A low railing divides the pretty and well-kept garden from the platform. On the north side, at the end of the booking-office, is a small frame, not heated in any way, but occupying a snug corner, and here our horticultural friend winters his choicest plants. There are also two slips of border, one on each side of the line, close to the station. These were occupied by mixed plants, and the variety of colours presented by the several flowers was very attractive. Several of the Kentish railway stations are gay at this season of the year with flowers, but the station at Yalding stands out from all the rest that I saw in the course of a short run through a portion of the country, and I think its appearance deserves some notice in your columns.

R. D.

AN ABERDEEN FRUIT AND MARKET GARDEN.

THE following description of a garden of this kind, taken from the *Aberdeen Free Press*, may not be without interest:—The Gartthoe property, which belongs to Messrs. Moir & Son, of Virginia Street, Aberdeen, lies on the north bank of the river Dee, immediately above the old bridge. The extent of land is 24 acres, 130 acres of which have been converted into garden ground for the growth of fruit and vegetables. Commencing at the Bridge of Dee village, a good road, extending about a mile and a quarter, leads westward along the middle of the Gartthoe property, and past a handsome structure in the Elizabethan style—Gartthoe house—the residence of the proprietor, J. Moir Clark. The tasteful and extensive lawns, here stretching to the south and west, and the fine orchard, may be referred to as an excellent specimen of successful landscape gardening. Between the road and the river lies the principal part of the ground, devoted to the production of fruit, &c. It is bounded on the north by a high stone and lime wall, and on the south by the river, the average width of the gardens being perhaps about a furlong. The exposure of the ground is exceedingly good, and the contour varied by height and hollow in a remarkable degree, giving to the surface not a little of the picturesque in character. To gain a just idea of the great amount of labour that has been expended on the laying out of the gardens, it must be kept in view that various of these knolls, now nicely planted with fruit trees and shrubs, or growing heavy crops of vegetables, were formerly hard protuberances, producing nothing but whins, if even those; and that the embankment which runs along the lower margin for a considerable distance, to prevent the encroachment of the river when in flood, is also a new formation, from material taken down from the higher ground. This embankment is about seven feet in height, and perhaps twice as broad at the base, and covered on the surface with

a thick sere of grass. Alongside it we find a very large space taken up with Raspberry canes, staked in the usual manner. Some twelve acres in all are devoted to the growth of this fruit. About twenty acres are in Gooseberries, and thirty-five acres in Black and Red Currants. The breadth in Strawberries is thirty-five acres; but these are in three large divisions outside the wall, the south face of which, we may state, is occupied by young trees of the Morello Cherry, trained to it. There have been planted, in addition, at suitable distances, among the fruit bushes, two thousand Kent Cherry trees; two thousand Green-gage Plum trees; and six thousand Apple trees—all standards, of course. The space not filled by fruit bushes is filled up with vegetables. The extent of ground occupied in this way will be indicated, if we state that the number of Cabbages put in this season is 250,000; that the Carrot crop is estimated at 150 tons; Peas at 2,000 pecks; while 20 tons of Rhabarb for bottling have been grown for the season. In addition to this, Turnips, Potatoes, Beetroot, Parsnips, &c., are grown in considerable quantity in plots in the open spaces between the rows of fruit bushes.

The crop of fruit alone, in the Garthdee Gardens, is estimated at 50 tons for this season. The gardens having been laid out only three years ago, the Goosecherry and Currant bushes have not yet attained to anything like their full productive power, while only a very few of the fruit trees have begun to come into bearing. A year or two hence, the produce of the gardens will naturally be very largely increased; meanwhile, under efficient management, both the fruit and vegetable departments seem to be in a thoroughly thriving condition.

In all matters of detail, the laying out appears to have been very carefully gone about. At intervals of sixty yards, Beech hedges have been planted to afford the requisite shelter to the fruit trees and bushes; and the means of irrigation in a time of drought are at hand, in the shape of a water-main, that runs along under the broad walk which intersects the gardens from end to end. Fire plugs are inserted at suitable distances, and water from the main can be distributed to the boundary of the gardens, either way, by means of hose-pipes. The water in this main is, we may say, obtained, by meter, from the Cairnton Gravitation Works, which supply Aberdeen. During the present season, when moisture has been abundant in the form of rain, there has been little or no occasion to resort to artificial means; but in a comparatively dry season, such as last summer, large quantities of water are used. Near the centre of the gardens is a tool-house, and under the same roof, separate accommodation for the male and female workers taking their meals. Of these, the number employed as hoers, and in picking fruit, &c., at the present season is 150. Even in winter, the number of men required to do the needful digging, and so on, is from 30 to 40.

TREES OF LIBERTY.

THE British May-pole was transported to America, and during the war of independence was adopted by the Bostonians as the emblem of liberty. When La Fayette returned to France he had one of these symbolic trees, planted on a broken crown and sceptre, worked into his saddle-cloth, and shortly afterwards the emblem spread through France. The first person to plant one of these trees appears to have been M. Norbert Pressac de la Chassaganie, curé of Saint-Gaudens, near Civray, in the department of the Vienne. The tree selected was a young oak, which was planted in the centre of the village in presence of the municipal council and the inhabitants in general. The curé made a touching speech in favour of the revolution; and after the ceremony all the persons engaged in lawsuits referred their disputes to arbitrators, rich and poor embraced each other, and there was universal rejoicing. This episode (adds M. Louis Combes) was repeated through thousands of communes, and these trees became as sacred for the citizen as the standard for the soldier. In May 1792, there appear to have been 60,000 of these trees in France, and a number had already been planted in Paris. The Marquis de Villette, who had warmly adopted the new ideas, wrote at that period:—"One may see in Paris 200 trees of liberty covered with garlands, ribbons, and flowers." One of these trees was planted in the gardens of the Tuileries, Louis XVI. presiding at the ceremony. It is needless to say that it was afterwards torn up, because it had been "sullied by the impure hand of Capet." The Convention authorised the "orphans of the country" to destroy it, and to set up another tree in its stead. The *Peuplier* on account of its name (*Populus* or Poplar), was the tree generally preferred. The ceremony of planting these symbols gave rise to revolutionary orgies, during which people danced and sang the "Ça ira" and the "Carmagnole," magistrates, generals, representatives of the people, and constitutional bishops and curés, no doubt headed by Goose Gobel, joined in the revels and footed it round the tree. "At the planting

of a tree of Fraternity in the Carrousel," says M. Louis Combes, "the maire of Paris with all the municipal councillors, wearing their scarfs, danced a patriotic farandole pell-mell with the federals, savoyards, and sans-culottes of all professions. The author excuses these saturnalia, in which he relates that men who afterwards became very sedate and imposing personages joined. "Why not?" he asks. "Did not David dance before the Ark? Up to the year VII. no one was shocked at this show of enthusiasm, and the general could dance with his soldiers round a tree of liberty set up in camp without compromising his dignity." In the height of the Revolution every village was obliged to have its tree, round which a *fête* was held on the 21st of January—"the anniversary of the just punishment of the last King of France." From divers official letters it would seem that these trees were protected by the authorities so late as the year X., when Napoleon was First Consul. The cutting down of them was punished with death. At Rouen nine people were executed for this crime. At Amiens a tree was sawn in two, and a few days later a new tree was planted with great pomp, the trunk of the old tree figuring in the procession, escorted by a thousand men with arms reversed, and marching to the sound of funereal music. To show how completely these symbolic Poplars and Oaks passed into the customs of the people, M. Louis Combes writes as follows:—"During the counter-revolutionary movements which took place in some communes near Coulommiers, a locality was suddenly invaded by bands of peasants, who, after having crushed the patriots and committed several excesses, wished to celebrate their triumph by singing a 'Te Deum!' The idea of singing a 'Te Deum' in Frimaire of the year II., when the worship of Reason had been established in all parts, and when priests had abjured by thousands! This sole fact classed these men on a level with the Vendéans, and in the lowest regions of the counter-revolution. Well! these counter-revolutionists, these rebels, these blind enemies of the Republic and of philosophy, never dreamed for a minute of opening the church to celebrate their victory over the Republicans, they went spontaneously and chanted their 'Te Deum' at the foot of the tree of liberty!" Towards the close of his volume M. Louis Combes has naturally to tell how the reaction fell upon these trees and rooted them out of the land. Of the trees which were planted in 1818 the author has but a poor opinion; he talks of them of having been "first of all watered by the reaction," and of having received the benedictions of the clergy—benedictions which, he scoffingly adds, did not save them from the axe of M. Léon Faucher in 1849.

HARDY PLANTS IN FLOWER ROUND LONDON.

(FROM AUGUST 22ND TO AUGUST 29TH, INCLUSIVE.)

BY OUR OWN REPORTERS.

Abronia umbellata	Colechicum autumnale	Gentiana Andrewsii	Sedum albicans
Anoda hastata	byzantinum	Helenium atropurpureum	albo-rosea
triangularis	speciosum	Linaria italica	spicatum
Apios tuberosa	variegatum	Nuttallia italica	pectabile
Arnica Chamissonii	Colutea orientalis	Coreopsis coronata	Semprevivum
Aster lamarifolius	Coreopsis coronata	Coronilla jucea	Heuffellii
Novae Angliae	Novi Belgii	Shortii simplex	Solidago elliptica
Astragalus leontinus	Campanula isophylla alba	Centaurea americana	neglecta
Chrysoeema linozyris	Clethra acuminata	Gladolus formosissimus	nemorosa
		Colchicum autumnale	ulmifolia
		Helenium atropurpureum	Spraguea umbellata
		Linaria italica	Stachis Portunei
		Nuttallia italica	Teucrium orientale
		Coreopsis coronata	Verbena pulcherrima
		Coronilla jucea	Ximenesia encelioides
		Novi Belgii	Zinnia Hageana
		Shortii simplex	
		Astragalus leontinus	
		Campanula isophylla alba	
		Centaurea americana	
		Gladolus formosissimus	
		Colchicum autumnale	
		Helenium atropurpureum	
		Linaria italica	
		Nuttallia italica	
		Coreopsis coronata	
		Coronilla jucea	
		Novi Belgii	
		Shortii simplex	
		Astragalus leontinus	
		Campanula isophylla alba	
		Centaurea americana	
		Gladolus formosissimus	
		Colchicum autumnale	
		Helenium atropurpureum	
		Linaria italica	
		Nuttallia italica	
		Coreopsis coronata	
		Coronilla jucea	
		Novi Belgii	
		Shortii simplex	
		Astragalus leontinus	
		Campanula isophylla alba	
		Centaurea americana	
		Gladolus formosissimus	
		Colchicum autumnale	
		Helenium atropurpureum	
		Linaria italica	
		Nuttallia italica	
		Coreopsis coronata	
		Coronilla jucea	
		Novi Belgii	
		Shortii simplex	
		Astragalus leontinus	
		Campanula isophylla alba	
		Centaurea americana	
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		Centaurea americana	
		Gladolus formosissimus	
		Colchicum	

THE INDOOR GARDEN.

CYCADS.

MANY valuable additions of late have been made to this class of plants; prominent among them are *Encephalartos villosus* and *E. Ghellinckii* (or *gracilis*), from Natal; *Macrozamia Dennisonii* and *M. Frazerii*, from Anstralia. But the most interesting, and perhaps the most beautiful, is *Bowenia spectabilis*, from North Queensland. This is a stemless plant, and does not confine itself to one point of development, but forms several crowns, from which it throws up single fronds that develop like an umbrella, or similar to the curious *Amorphophallus* and *Godwinia*; the leaflets are rhomboid; it is fond of heat and moisture, and might be used by way of change as a plant for table decoration. The best Cycads adapted for general decoration are the tall-growing, such as that represented in the accompanying woodcut. This kind (*Cycas circinalis*), is a native of the East Indies, and is one of the finest of the genus, attaining a height of from ten to twelve feet, and furnished



Cycas circinalis.

with a noble head of fronds, of a dark shining green above and of a paler colour beneath. As a dwarf plant for pedestals or vases, *C. revoluta* is good. It will stand more cold than any other Cycad. *C. Rumphii* is another East Indian species allied to, if not the same as *C. circinalis*.

Among *Ceratozamas*, *C. mexicana* is a fine plant, when it can be set on a tall pedestal, where its fronds, which grow from six to eight feet in length, can hang down gracefully. *C. Miqueliana* is more erect than the last, and is also a fine Cycad. A plant has made its appearance lately under the name of *C. Kusteriana*, but it is very like, if not the same as, *C. Miqueliana*. The *Ceratozamas* are all Mexican.

Zamias proper are West Indian and Tropical American plants; they are dwarf in habit, and do not form much stem; the only species worth cultivation as an ornamental plant is

Z. Skinneri, which I consider to be the grandest of all Cycads. *Encephalartos* is an African genus which contains some of the noblest of plants. *E. Caffra* (the Caffer's Bread) is a giant which grows from ten to sixteen feet in height, and spreads from twelve to fourteen feet in width; its foliage is dark green, spineless, very dense and stiff; a very distinct plant. *E. Altensteinii* is of a deep green, more erect than the last, and has a few spines on the margins, and one at the point of the leaflets. *E. lanuginosus* is similar to it, but has more wool at the base of the leaflets, and is spineless; both very fine plants. *E. villosus* has many spines on the pinnæ, is more erect in habit, and very woolly at the base of the fronds; a noble decorative plant for warm conservatories. *E. Lehmannii* is a smaller plant, with spineless glaucous fronds; useful for variety, and in small houses. *E. horridus* is a moderately vigorous grower, the fronds of which are glaucous; but, being very spiny, it is unsuitable for general purposes. *E. Ghellinckii* or *gracilis*, a recent introduction of Mr. Bull's, is an erect grower, with narrow villose leaflets, almost snow white; it is a moderate grower, and is an extremely elegant plant. *E. cycadæfolius* resembles this species, but its leaves are broader, and not quite so white. *Dion edule*, a native of Mexico, is an erect growing plant, very symmetrical, glaucous, and slightly woolly; it grows moderately large, and ranks among those plants of the first class. Of the Australian *Macrozamia*, *M. Dennisonii* (*Catakidazamia Hopii*) is the best. It is a strong grower, with spreading, bronze-green fronds; this is a plant which will stand greenhouse treatment. *M. Frazerii* is an elegant, bright green foliated plant, the fronds of which are from two to three feet long, and recurved; the stem is very thick, oftentimes, indeed, as thick as the plant is high. Young plants of it are found to be very useful for vases. *Stangeria paradoxa*, a native of South Africa, must be regarded only as a curiosity. It is closely related to *Encephalartos* in structural characters, but differs remarkably in habit and foliage. It has a stout fleshy stem or trunk, which seems to possess but little power of growth. These are a few of the best for general decorative purposes; but for those who only want two or three for conservatory ornamentation, I would recommend *Encephalartos villosus*, or *Altensteinii*, *Cycas circinalis*, and *Macrozamia Frazerii*. For stove decoration *Cycas circinalis*, *Dion edule*, and *Ceratozamia Miqueliana*, stand in the first rank.

The best soil for them is a mixture of good loam and sand, and they should be potted firmly; when pot-bound a little manure-water will be of benefit to them. If a plant gets out of health it should be cleared of its soil, all dead roots should be cut off, and it should be put into a small pot in poor soil, set on a good bottom heat, and kept moderately dry. When Cycads are developing their fronds they should not be moved, if that can be avoided, as in moving them the young fronds often receive a twist from which they seldom recover. When in full growth they should be watered freely, but when at rest it is best to keep them moderately dry. When a seaweed-like growth forms just under and on the top of the soil in which these plants grow, it is a sure sign of health, and should not be disturbed; when this is absent it is a sign that the plant is not vigorous at the roots, and that care is required in watering it. Cycads, like Palms and Tree Ferns, belong to the aristocracy of the vegetable kingdom, and deserve more attention than they generally get from cultivators. J. CROUCHER.

TRICHINIUM MANGLESII.

BY W. THOMPSON, IPSWICH.

As the introducer of this pretty Amaranth, perhaps you will allow me to reply to your correspondent "W.'s" enquiry respecting its management. As far as my experience goes, the secret of successful treatment consists in keeping up a succession of young plants. After once or twice flowering, it is rare to see a plant maintain a presentable appearance. The foliage produced the second season is always narrower and weaker than that on plants which have not yet bloomed, and the removal of the dead flower-stems, which all spring from the crown, often gives the plant a scraggy look. I know not what may have been effected by more skilful cultivators, but in my hands the only satisfactory mode of propagation

was found to be by root-cuttings. If a plant two years old is examined, it will generally be found to be furnished with a somewhat fleshy root of the size of an ordinary tobacco-pipe, or thereabouts. This should be cut into short pieces, say from three-quarters to one inch in length, and the fragments should be treated precisely like seeds, sowing them in a soil composed of finely-sifted peat and sand. A stock of young plants may be thus obtained with certainty, but the patience of the amateur may be put to the test, for several weeks will probably elapse before the root-cuttings develop their latent buds. Sooner or later, however, growth will take place; of course the strongest cuttings will furnish the most vigorous plants. Cuttings of the flower-stems can be rooted, but they never make satisfactory plants. Sandy peat, with a little loam, is apparently the best compost for this plant; and the greenhouse is undoubtedly its proper place. I never found it do so well in the open border.

LUCULIA GRATISSIMA.

To Mr. Hobday's excellent instructions (see p. 656 of your last volume) respecting the culture of this most beautiful and deliciously fragrant shrub, I beg to add my experience in reference to its growth as a pot plant. The chief difficulty is to strike it from cuttings; but that, after a little practice, may be overcome. I select cuttings of short-jointed wood as early in the season as they can be had in a rather hard state. These may be obtained in May, if a plant is left without being cut down after flowering. I slip them off with a heel, and use the knife merely to remove any loose bark which may extend beyond the wood, and to divest them of superfluous leaves. Thus prepared I insert the cuttings in small thumb-pots filled with sandy peat, and give a moderate watering, to settle the soil. The latter should be in a rather moist state when used, as I find cuttings of the *Luculia* are impatient of damp, which, in the event of repeated waterings being necessary, it is difficult to prevent. After potting, I place them in a shady situation in a house, the temperature of which may average 55°, and cover them with a hand-glass. The only further attention which they will require will be an occasional sprinkling of water; this should be applied towards the evening, and the plants should be left uncovered until the following morning. If cuttings are properly attended to in these respects, and allowed to remain undisturbed during the summer, the probability is that nine-tenths of them will root. As soon as they are fairly rooted, they will grow away freely, and should be shifted into a size larger pots, and gradually exposed to a freer circulation of air. No advantage will be gained by keeping them in a temperature exceeding 60°, as, if they are kept in a warmer place, they will grow weaker, and will require a great deal of stopping to keep them bushy. As the sun becomes powerful, it will be necessary to shade at least for a few hours during the middle of the day, for this plant is exceedingly liable to suffer from direct sunshine; and I have never been able to do any good with it, except when I could protect in this respect; I have also found that sudden exposure to drying currents of air injures it more than most plants. With attention to its wants in these respects, and if allowed plenty of pot room, and kept free from insects, nice specimens may be formed by the end of the first season, each of which may produce flowers, but this will greatly depend upon their having been stopped at the proper season. Weak plants should not be stopped at all, and there will be nothing gained by stopping even the stronger plants more than once, and none should be stopped later than the middle of July, or the first week in August. As soon as they have pretty well ripened the wood from which flowers are expected, they should be kept rather cool, or they may be removed to a shady but airy situation in the greenhouse, or to any place where they can be assisted to harden their wood by a cool, dry atmosphere. Such of the plants as have never been stopped will probably show flower towards the middle or end of September, when they may be removed to a damper atmosphere and kept rather moist, so as to encourage them to develop their beauty and fragrance; and if the plants are removed from the greenhouse or cool position in which they have been placed to ripen their wood, to a warmer situation, at intervals of about a fortnight, they will afford a succession of flower from September to March.

When the plants have done flowering, they should be rather sparingly supplied with water for a fortnight previous to their being cut back, and they may be stowed away in any spare corner of the greenhouse or cold pit, where they will be safe from their great enemy—damp. After being treated somewhat dry for a fortnight, they should be cut back sufficiently to secure a compact, bushy growth, and that is the time when they can, with least trouble, be

thoroughly cleared of insects. To the attacks of thrips they are especially liable, as most delicate plants are, and if these are permitted to establish themselves they will do much injury during the ensuing season. After the plants have been cut back and cleaned, a portion may be encouraged to grow early in the season, so as to come into flower in the autumn; but it will be advisable to introduce them into heat very gradually, otherwise they will break their uppermost buds only, and will consequently become naked below. If the plants can be kept during their second season's growth in a moist growing atmosphere, where they will receive abundance of light and protection from the direct rays of the sun during the summer months, and also be guarded against the attacks of insects, and allowed plenty of pot room, they will form handsome specimens, and flower abundantly during the dull months of winter.

As regards soil, the *Luculia* is not particular. For its culture in pots, I use about one-half turfy peat, and one-half light turfy loam, adding a portion of silver sand, more or less, according to the nature of the other materials. Those who have room for the *Luculia* in the conservatory border will find it a most eligible plant for such a situation. But it succeeds best shaded from the direct rays of the sun from the beginning of May to the end of August; and in order to bloom it in perfection, it also requires to have the house kept rather close. It will not thrive in a temperature under 40° or 45°; for where the temperature does not average this the flowers are liable to damp off. Planted out, it will succeed perfectly in any light soil, whether peat or loam. It will be found to require some attention, in order to keep it clear of insects, and also the same treatment, with regard to stopping and cutting back, as recommended for young plants; but as when planted out it cannot receive that assistance in the way of heat and moisture, which can be given to plants in pots, never stop later than the middle of July. S.

Lapageria alba.—It is unnecessary to say that this is one of the most beautiful of greenhouse climbers; yet it too often bears the character, but unjustly, of being a slow and uncertain grower. It is not so, however, for it grows and blooms as freely as the well-known *L. rosea*, and requires precisely the same kind of treatment. Both kinds have also the advantage of coming into bloom in the autumn, when most other climbers have done flowering. In the Royal Exotic Nurseries, Chelsea, planted along both sides of the central passage of the entrance conservatory, may now be seen both kinds coming profusely into bloom. *L. rosea* has been planted four years, and *L. alba* two; both have grown rapidly and under exactly the same circumstances, yet the white promises to outstrip the red in point of growth, and to produce flowers quite as freely. The leaves of the white kind are more cordate in shape than those of the red, and they do not taper so gradually towards the apex, a circumstance that may help purchasers to distinguish the one from the other when both are out of bloom.—F.

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Plumbago capensis.—One of the best conservatory climbers in flower at the present time is this *Plumbago*. In the conservatory of the Royal Botanic Society, Regent's Park, two fine planted-out specimens of it are producing a perfect mass of light blue flowers. It should be used against pillars, &c., in every conservatory and large cool house.

Mesospidium vulcanicum.—This is one of the prettiest of all cool-house Orchids; it is dwarf in character, and produces nice spikes of crimson flowers. It is, moreover, quite a new plant, having only flowered this season about London for the first time. As a companion to *Odontoglossums*, *Cypripediums*, and *Masdevallias*, it will form a valuable acquisition. It is now in good bloom at the Exotic Nurseries, Chelsea.

Moss as an Evaporating Surface.—Many are the methods employed for maintaining the atmosphere of Orchid and other plant-houses in a healthy, moist condition. Some place finely-sifted gravel on the stage shelves, in order to retain the moisture; but a better way is to place a layer of sphagnum on the shelves, and on other evaporating surfaces. The sphagnum will be found to retain more moisture than any other material that is used. This is the plan now adopted in all the leading London nurseries.

Eucharis amazonica.—I have grown this plant for four or five years, but have not been able to flower it. Can you or any of your readers help me?—AMATEUR. [Mr. Hovard, of Balham, replies as follows: the *Eucharis amazonica* should be placed in a stove or warm frame, well exposed to the light. An ordinary warm dung frame will do. Let the temperature be from eighty-five to ninety-five degrees, giving little air, and syringe the plant well early in the morning, and at 2 p.m., when the air should be taken off, no matter how hot the sun is. Under such conditions the plant will throw up flower spikes in ten days if in a healthy state].

Cephalotus follicularis.—This interesting little pitcher plant is now in as fine condition as we ever remember to have seen it, in the gardens of S. Rucker, Esq., Wandsworth; some of the best of the pitchers are nearly as large as an ordinary-sized small tea-cup. They are nicely tinged with brown, by being a little exposed to the sun, yet it is not advisable to expose them too much, as they are apt to get scorched. This pitcher plant is grown here in spongy material in small pots, that are inserted in others two sizes larger packed with sphagnum, these again are inserted in others still larger, prepared with sphagnum in the same way, so that the plants, though really in large sixty-sized pots, appear to be in pots much larger. They have no bell-glass over them, and are kept in an intermediate house, where they receive a good supply of water.

THE FRUIT GARDEN.

EFFECTS OF SPRING FROSTS ON PEAR BLOSSOMS.

BY RICHARD VARDEN.

THE following is the result of an examination of several thousand Pear blossoms, made some years ago to satisfy myself of the extent of injury they sustained from frost, under various circumstances of position. The mode of proceeding was, to examine in each case a given number of blossoms, generally one hundred. All that showed discoloration, when nipped through the lower part, were assumed to be injured, while those of a natural colour were considered good. Doubtful ones were thrown aside and not reckoned.

1. The first inquiry was, whether blossoms might be taken indiscriminately in all stages of development, or in average stages only. On examination, it was found that late blossoms were least injured. Thus, in one hundred of each,

	Bad opened blossoms.	Bad unopened.
Colmar d'Été had	100	42
Susette de Bayay	89	58
Easter Beurré	94	64

giving an average of ninety-eight bad blossoms out of the hundred of those fully opened, and but fifty-five out of the hundred of the unopened. This great difference showed, that for purposes of comparison, only such blossoms as were an average of forwardness, for the particular variety, should be taken.

2. The next comparison was, average blossoms taken from protected and unprotected situations of equal elevation, the protection being a hedge with elm trees, on the east or windward side of the plantation. Out of one hundred blossoms of each sort, the numbers of bad were as follow:—

	In the sheltered.	In the exposed situations.
Hessel	78	92
Louise Bonne, of Jersey	83	96
Williams' Bonchrétien	82	88
Glou Morceau	20	19
Average	67	72

showing that the shelter named had on this occasion lessened the injurious effect of the frost about twelve per cent.

3. The third point examined was, whether varieties whose blossoms are equally forward are equally hardy. The result proved they were not. Thus, in blossoms equally developed, the trees being free from shelter, and on ground of nearly the same level:—

Beurré Diel had	68 bad in 100.	Susette de Bayay	58 bad in 100
Fondante Van Mons	9	Easter Beurré	64
Doyenné d'Été	18	Williams' Bonchrétien	85
Colmar d'Été	42		

From these preliminary examinations, it appeared necessary, in investigating the relative amounts of injury done by frost at different heights, to compare only trees of the same variety, taking the average blossoms of each kind, and avoiding shelter. The result was as follows:—

	Height in Feet above Sea Level.	Number of Bad Blossoms in 100	Height in Feet above Sea Level	Number of Bad Blossoms in 100
Colmar d'Été	48	71	58	97
Doyenné d'Été	48	18	60	88
Marie Louise	56	19	100	82
Williams' Bonchrétien	50	88	59	82
Ditto on Quince	51	85	97	61
Louise Bonne of Jersey	48	92	51	92
Jargonelle	53	79	60	97

Average of the lower, sixty-five bad; of the higher, eighty-six bad.

These results are too conflicting to found any theory upon, but they show that elevated grounds are not always safest, as many fruit-growers suppose. Perhaps fogs and dews, the assumed cause of the inferiority of low situations, were absent on this occasion, or prevailed as much or more on the higher ground. This point, however, was not observed.

5. The fifth subject of comparison was, the relative amount of injury sustained by the blossoms of several well-known varieties, growing at nearly the same height above sea level, viz., from forty-eight feet to sixty feet, shelter being avoided, and the average blossoms of each kind selected as before. The result gave the following number of bad blossoms in the hundred:—

Fondante Van Mons	9 bad in 100	Duchesse d'Angoulême	74 bad in 100
Beurré de Capiaumont	18	Knight's Monarch	76
Doyenné d'Été, on Quince	18	Susette de Bayay	78
Marie Louise	19	Jargonelle	79
Glou Morceau	19	Easter Beurré	79
Summer Franc Réal	36	Hessel	85
Colmar d'Aremberg	42	Williams' Bonchrétien,	
Citron des Carmes	46	on Quince	85
Soldat Laboureur	46	Ditto, on Pear	88
Beurré Bretonneau	55	Triomphe de Jodoigne	88
Comte de Lamy	59	Doyenné d'Été, on Pear	88
Van Mons, Léon le Clerc	62	Napoléon	90
Brougham	64	Louise Bonne, of Jersey	92
Orphéline d'Enghien	66	Soldat d'Espéran	92
Beurré d'Amanlis	68	Vicar of Winkfield	92
Passé Colmar	70	Doyenné Gris	94
Colmar d'Aremberg	70	Beurré Diel	95
Colmar d'Été	71		

Discouraging as this was for many favourite kinds, I did not entirely despair of a crop. My trees were very small—only planted three or four years—so a few Pears on each would have been sufficient.

6. I found, sixthly, the number of blossoms on trees planted four years to average about—

600 for	Louise Bonne, of Jersey (Quince).
200 for	Williams' Bonchrétien (Pear).
500 for	Beurré Diel (Quince).
300 for	Beurré d'Amanlis (Quince).

which figures, after deducting the before-mentioned percentage of bad blossoms of each kind left:—

48 good blossoms for a	Louise Bonne, of Jersey.
30	Williams' Bonchrétien.
25	Beurré Diel.
96	Beurré d'Amanlis.

more than sufficient for a crop on such young trees, if all arrived at maturity.

7. The observations were extended to perry kinds, but not knowing the names (many being unknown seedlings), very little benefit could result, as the great difference of their hardness, even in similar localities, rendered averages or comparisons imperfect; for instance, it was found that the number of bad blossoms ranged as under—

A tree at 114 feet above sea level, all bad.

75	"	"	"
63	"	"	"
60	"	"	"
48	"	"	none bad.
47	"	"	"
45	"	"	"
36	"	"	"

with almost every intermediate degree of damage in the others. These blossoms were taken without reference to average state, just as they happened to be gathered, and none of the trees named were particularly sheltered.

8. On comparing the perry trees growing on the western or sheltered side of the hill, the average of twenty-two trees gave thirty-three damaged blossoms in the hundred; while on the eastern or exposed side of the hill, the average of thirty-three trees gave forty-one damaged in the same number—a difference of about twenty-five per cent. in favour of the sheltered aspect.

9. Little or no difference was perceived in amount of damage done to trees of 15 or 20 years old, and to trees of from 80 to 100 years; the average being 32 per cent. of damage to the former, and 31 to the latter. Quite young trees indicated a much larger amount of damage, but the point was not investigated, the necessary materials for a fair comparison not being at hand.

The foregoing examinations were made on the 31st of April, and the 1st and 2nd of May, 1855; after which, owing to the occurrence of more severe frosts, which entirely destroyed the blossoms of many choice varieties, they were discontinued. There was no fruit (except perry kinds) on any of the trees examined, except a few Williams' Bonchrétien. The May frosts completed the destruction of all the blossoms of table varieties.

The temperature of the nights, as registered at Worcester, eight miles distant, at a spot 100 feet above the sea, was as follows:—

	Minimum in Shade.	Radiating on Grass.	Minimum in Shade.	Radiating on Grass.
March 1	36	32½	March 29	30
" 5	30½	25½	" 30	25
" 6	28	24½	" 31	28½
" 7	31	28	" 2	22½
" 8	30½	26	April 3	32
" 9	29	27	" 5	31
" 10	29	28	" 13	35
" 12	27	24½	" 19	31½
" 14	32	30	" 20	35
" 20	31	28	" 21	32
" 22	32	31½	" 23	26½
" 23	32½	31½	" 24	29
" 24	31½	30	" 26	36
" 26	24½	21	" 27	30
" 27	26	21	" 30	32
" 28	31	28		

Many of the foregoing frosts were accompanied by strong winds

from the east and north-east, but not much wind from other quarters. The examination of the blossoms was made between this and the 3rd of May, after which the temperatures were as follows:—

	Minimum in Shade.	Radiating on Grass.		Minimum in Shade.	Radiating on Grass.
May 3	23	22½	May 12	36	32
" 4	33	31	" 17	35	29
" 5	25	20	" 18	30	27
" 9	23	22	" 23	37½	32

The above observations add little or nothing to the existing knowledge of frosts; but the results being given in figures, are in some respects more definite and convenient for comparison than description can be, and on this ground may prove interesting to fruit growers. Should the method of investigation adopted be considered sufficiently correct, the system might with advantage be extended to various localities, and the results, when collated, given as rules to assist fruit planters in the selection of sites and varieties for orchards, &c., and might perhaps lead to the discovery of laws regulating the action of frost at present hardly anticipated. Perhaps the first series of experiments might with advantage be confined to some one well known and widely diffused variety, such as the Jargonelle, which, if numerously reported on, might be made an index for comparing the earliness or lateness of localities, aspects, elevations, &c.; by the dates when the blossoms pass through the several stages of bud, flower, and setting; and also give, by noting the percentage of damaged blossoms, a more correct idea than we at present possess of the relative effects of frost under the various circumstances of latitude, elevation, aspect, &c. In after seasons, when other varieties are under examination, the results could, by comparison with a Jargonelle growing under similar circumstances, be reduced to a common standard by simple calculation.

In this neighbourhood many of the spring frosts were accompanied with fog, and proved far more destructive than those of 1855, although the temperature was not so low by several degrees—the minimum then being on the 5th of May 20°, whereas the minimum of the present blossoming season, which also happened to be the 5th of May, was only 26°. This appears to support the opinion that foggy or wet frosts are more destructive than dry ones.

The principal spring frosts were:—

	Minimum in Shade.	Radiating on Grass.		Minimum in Shade.	Radiating on Grass.
April 21	32	23	May 2	31	27
" 23	31½	27	" 3	32	30
May 1	33	30	" 5	28½	26

The damage caused by the earlier of these frosts was greatest on the low grounds, where the fogs most prevailed. I cannot speak of the later ones, as almost every blossom was destroyed, and comparison rendered impossible. At 48 feet above the sea and 8 feet above the bottom of the valley, Beurré Diel had 95 blossoms out of the 100 destroyed, while at 112 feet above the sea, it had but 12 out of the 100 that were damaged. The injury to blossoms diminished progressively with their height from the ground, thus—

	Above the ground.....	10 feet	20 feet	30 feet
Standard perry Pear tree, near brook, 40 feet above sea level		95	90	60
Standard perry Pear tree, near last, 40 feet above sea level		50	40	20
Standard perry Pear tree, on higher ground, viz.: 48 feet.....		20	0	0

And the amount of damage was as great on the leeward as on the windward side of the trees. I regret there are no means of comparing these observations with each other, to ascertain the relative advantages of height of ground and of height above the surface—I mean of dwarf trees on elevated ground, compared with the upper parts of standard trees on lower ground, rising to the same level.

SUMMARY.

1. Blossoms in bud are less injured by frost than those in flower; hence as frosts decrease in severity as the season advances, late blossoming is one source of hardiness.
2. When frosts are accompanied with wind (*i. e.*, black frosts) the injury to blossoms is lessened by hedges, or screens, on the windward side of the trees.
3. Varieties differ in hardiness, though their blossoms be equal in forwardness.
4. Blossoms on low ground are occasionally as safe, or safer, from frosts than on high grounds; safer from black frosts, but more liable to white frosts.

5. Varieties may be arranged according to their power of resisting frosts, but not at present, from want of sufficient data.

6. The blossoms on free-flowering varieties are so numerous, that five per cent. would be sufficient for a crop, if they arrived at maturity.

7. Varieties differ so much in hardiness, that occasionally frosts, which destroy all the blossoms of one kind, leave all the blossoms of another uninjured.

8. When frosts are accompanied with wind (that is, black frost,) the injury to blossoms is greater on the windward than on the leeward side of a hill.

9. The blossoms of old trees, and growing trees, if not very young, are equally hardy.

10. White frosts accompanied by fog are more destructive than dry frosts, and the damage is greatest on the low grounds, or wherever the fogs are most dense.*

The injurious effect of frost on vegetation is increased by rapid thawing. In the severe frost of Christmas, 1860, a Privet hedge near the above mentioned Pear trees was killed where protected on the east side from the rising sun by Laurels, &c., but not injured in the parts exposed to its early rays. Dr. Lindley also mentions an Australian plant at Chiswick which had its blossoms killed by frost on the south side of the wall against which it was planted, but spared where it lapped over the wall on to the north side. A common sort of Camellia stands the winter in Somersetshire, planted at the foot of a north wall where the sun cannot reach it, but dies if the wall so incline to east or west as to receive winter sun. The injurious effects of rapid thawing induce many practical orchardists to prefer north and north-east slopes of hills for perry or cider trees where quantity and not quality of fruit is most considered.

BANANA CULTURE.

The Musa or Plantain is one of the best of our less known cultivated fruits. It is an undoubted acquisition to the dessert, and when the fruit is properly ripened it is delicious and highly relished by most people; even those who do not take to it at first very soon acquire a taste for it. Musa Cavendishii is the most eligible variety for general culture, as it is one of the dwarfest, and does not require a lofty structure to accommodate it. Neither does it require such a high temperature as some. It is a most prolific bearer, yielding in a chance way bunches of fruit weighing not less than fifteen pounds or twenty pounds, and under liberal treatment this is sometimes more than doubled. For the benefit of such as are not familiar with the plant, I may briefly describe it. Musa Cavendishii grows from six feet to ten feet high, the leaves themselves adding about a half to the height. Irrespective of its fruiting qualities, this Musa is a noble object, and forms a grand and imposing background to any collection of stove plants. When ripe the fruit is yellow, the skin peels easily off, and the soft, pithy-looking body within is the eatable part. The bunch ripens in succession, beginning at the base, and one bunch will afford a supply for a considerable time. The flavour is better and more piquant when the fruit is gathered before it is quite ripe. Indeed, it has been stated that, if the whole massive bunch is cut off just when the upper tier is getting ripe, and hung up in a dry, airy fruit room, the fruit will ripen slowly, and afford a supply for two months. This, however, is improbable; for when the first fruit begins to ripen, the greater portion is quite green and not fully swelled, and it requires a considerable degree of heat to ripen it. By pulling the pips or fruit off singly, however, when turning yellow, as I have stated, I have had fruit of it for a long time in succession.

As regards culture, a house should be wholly devoted to this Musa. Five or six bunches of fruit in the year will, as a rule, be found more than sufficient, perhaps, for a supply, even in a large establishment; however, in growing the plant for its fruit, something like a system must be followed. A roomy plant stove, either span-roofed or lean-to, will do; if the former, the plants must be grown along the centre of the bed in the middle of the house where there is most room for them

* There are two kinds of frost:—1st, black frost, caused by Polar currents, and scarcely ever occurring in a calm. 2nd, white frost. This is of local origin, being the effect of terrestrial radiation, added to a cold atmosphere, and white frosts occur only in calms, though the air is actually moving at a slow rate down the slopes (see "Book of the Farm," page 143). As a general rule, black frosts do not occur without wind, nor white with wind.

if the latter, they should be grown along the back. Although this *Musa* will grow, and even fruit, without bottom heat from pipes, provided the temperature of the house is kept well up, still it is much better to provide means for keeping the temperature of the soil to 80° or 85°. The bed may be like an ordinary Pine bed, and about three feet deep, which will allow a foot of drainage and two feet of soil. As this *Musa* is a rapid grower and a luxurious feeder, it requires a rich and open soil; loam and rough leaf-mould or well rotted hotbed manure in equal proportions will suit it well. The bed should be filled up to within a few inches of the top of the kerb stone, so as to allow space for copious waterings, and the soil may be beaten slightly with a fork in making up the bed, to prevent it from subsiding too much afterwards, and because it will have to serve as a stage for any other plants grown in front of the *Musas*. Having thus prepared accommodation for them, the next thing is the planting. This *Musa* produces suckers freely from the base of the old stems. Autumn or spring is about as good a time for planting as any, and suckers with one or two leaves are best. These should be planted sufficiently deep to cover the roots well, and five or six feet apart. This



The Banana.

will give plenty of head-room, and allow sufficient light for the successional suckers, as they spring up between, to take the place of those that have been cut down after fruiting. Good suckers will produce fruit within a year. If they are planted in August, say, and grown on in an ordinary stove temperature through the winter, and pushed on in spring as the days lengthen, with plenty of moisture, they will be fine plants by Midsummer, and will probably show fruit after that time, which will ripen in autumn and winter.

Fruit ripened in winter, however, is neither so large nor so good as that grown in a high temperature under the summer sun; and, as a supply of fruit of this kind is not likely to be desired or insisted upon all the year round, we should aim at having a supply from Midsummer to November. To accomplish this, the best plan would be to plant suckers in spring, not too early, and in August or September. Those planted in spring would be ready to throw up by November; but by keeping the temperature down to about 60° minimum and 70° maximum, and bottom heat the same, their fruiting could be prevented till December, after which time they might be

started with a higher temperature and more moisture. This would start the most mature plants into fruit at once, and the others would follow in succession, affording a supply from early summer onwards. During this period the autumn-planted suckers would be completing their growth, and showing fruit, as I have before stated, after midsummer, which would carry the supply on till winter.

The only attention needful while the plants are growing and fruiting is to keep up a steady bottom heat, starting at 75° or under, and raising it gradually to 85° as the days lengthen and sun heat increases; while the top heat may be kept at from 70° to 75° at night, and from 80° to 90° by day. Liberal waterings and syringings must be given, and the fruit must be well exposed to the sun and light. As a rule, they will produce more suckers than are required, and if these do not come up in the proper place, they should be lifted and planted in the place of those which have been removed after fruiting; but in doing so the old roots should be taken out, and several barrowfuls of fresh soil added where the new suckers are put in. In this way the succession is kept up without having more plants than there is either room or need for. When suckers are scarce, the old stems may be taken up with a root, and potted or laid in anywhere where they can have heat and moisture, and they will produce offsets in a short time. Sometimes the *Musa* is grown in tubs, and we have had to do with them in this way; but to plant out in the bed is by far the best way to secure vigorous plants and heavy fruit. It is, however, occasionally necessary to use tubs, in which case more attention in watering, &c., is needful. I have thus sketched briefly something like a practical method of cultivating this plant for its fruit. It is already grown in many establishments as an ornamental stove plant, and we now and then hear of chance instances of its fruiting; but it is seldom grown with that object in view, and it is for those who have the accommodation to do this to encourage the culture of such a useful, wholesome, and highly desirable fruit. J. S.

South American Fruit.—A traveller writes from Peru:—"Callao has also finished the dispersion of my childish faith in tropical fruits. Oranges, Bananas, and Pine apples are worthy to be compared with Apples, Pears, Peaches, Grapes, Strawberries, Raspberries, Figs and Currants. But as for all other tropical fruits, even Cherimoyer, I consider them like Papaws, Persimmons, May-apples, Ground Cherries, and other wild fruits of the Northern States, as curiosities rather than substantial good fruits. The Cherimoyer is not so good as its cousin the Papaw; it tastes too much like the May-apple, and it has too large a proportion of great seeds. It is very good, especially in the best specimens; but it is not so good to my taste as an Orange, and much inferior to a Peach or a Pear. The Pears on this coast, however, are, as far as I have met them, poor. The Grape is the only fruit of the temperate climes which I find here of really fine quality; and that seems good from Talcahuano, in latitude 37°, to this point in latitude 12°."

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Raspberry Culture.—Being interested in the growing of Raspberries, I would be glad to know the most approved method of laying out a plantation of this fruit, both as to preparing the ground and weight of manure per acre; also, what fruit should be gathered from an acre of Raspberry canes.—M.

Outdoor Grapes.—I saw the other day some good bunches of Muscat hanging on a vine growing against the end of a black-bearded cottage at Enfield, and, on enquiry, was told that this vine invariably produces and ripens good crops every year. Is it usual for the Muscat to ripen its fruit out-of-doors in the south of England?—H.

Apples.—I have a fine orchard of these, from which I usually get plenty of good fruit; but, like my neighbours, I have this year very few. Singularly enough, however, my Ribstons are a good crop. Will some of your readers kindly say whether or not the Ribston generally is bearing better crops than other sorts this year?—Q.

Keeping Apples.—When there is a frost keep the Apples in a state of total darkness until some days after a complete thaw has come. In America they are frequently frozen as hard as stones; if they thaw in the light they rot, but if they thaw in darkness they not only do not rot, but lose very little of their original flavour.

The Peach Crop in America.—The papers in the Peach-growing districts say that the crop of this fruit will probably be the best, quantity and quality considered, that has been known for many years. But we venture to hint that a good crop of good Peaches will only be seen in the United States, when much more attention is paid to thinning the fruit, and otherwise regulating the energies of the trees than is at present the case.

MEMORANDUM OF THE FIRST COMMISSIONER ON
THE MANAGEMENT OF KEW GARDENS.*(Continued from p. 171.)*

THE DIRECTION OF WORKS.

ON the late First Commissioner of Works being appointed in December 1868 he commenced a new organisation of the department, by establishing, with the sanction of the Treasury, two secretaries, one to have control over the financial matters and general business, and the other with the title of secretary for works and buildings, for the superintendence of those services. The Assistant Secretary was appointed Secretary, and, having transacted the business of the Commissioners in superintending the horticulture of the parks and gardens in their charge, this duty was left in his hands. The secretary of Works and Buildings became the general adviser of the First Commissioner on certain questions connected with Works and Buildings, but no complete reorganisation of the department was effected. The consulting architect and surveyor of the Commissioners ceased to hold his office. At the end of the year 1869, the present First Commissioner was appointed, and on the retirement of the secretary of Works and Buildings, the First Commissioner proposed a more complete change, which, after communication with the Treasury, assumed the form of establishing a Director of Works. Mr. Galton, C.B., who had been an officer of Engineers, and employed as Inspector of Railways, and then as Secretary of the Railway Department at the Board of Trade, afterwards the Deputy Inspector General of Fortifications, and then as Assistant Under Secretary of State, at the War Office, was appointed the Director of Works. The First Commissioner issued instructions to the Director of Works regulating the performance of his duty, of which the following are extracts:—"The Director will examine all the estimates for works, buildings, maintenance, and repairs to be laid before Parliament, and bring under the notice of the First Commissioner all proposals which are new in character, or which are of questionable expediency. The Director will pay particular attention to the Treasury Circular of October 14, 1869, and to the Minute of the First Commissioner of December 11, 1869, and to any other general instructions in preparing the estimates. The Director will superintend the preparation and execution of all contracts entered into with the department for the execution of works and buildings, so as to see that the contracts are properly framed and duly performed, and all contractors' bills will be submitted to him for approval before payment. The Director will examine all indents and estimates for current works for maintenance and repairs, and no such works will be undertaken without his approval, except in cases of such emergency as to make a reference to him impracticable. The Director will give instructions, whether the works are to be carried on by contract, or departmentally, and in what manner tenders are to be made." These instructions were intended to apply to all works under the department, so that the whole might be brought under one uniform system of administration. No particular steps were taken by the secretary to explain to the subordinate officers the change that had been made; but it has been explained by the secretary that "Mr. Galton's appointment, and the purposes for which he was appointed, were so well known, that I did not think it necessary to make any special communication to Dr. Hooker." No question respecting the relations of the Director of Works to Kew Gardens came under the notice of the First Commissioner until the 7th of December 1870, when a report of the Director of Works on certain proposals of the Director at Kew was submitted to and approved by the First Commissioner. As the business did not appear to have been transacted in accordance with the general instructions, he added the following note, "works of this kind should be carried out on the responsibility of the Director of Works in future." The secretary underwrote it thus, "Write to Dr. Hooker;" a letter was sent, omitting the paragraph, and Dr. Hooker did not therefore receive this explanation of the effect of the changes which had been made in the administration of the department. The Director of Works carried on his duties according to his instructions, as shown in his report. Dr. Hooker, however, after a correspondence with the Director of Works, wrote an official letter to the First Commissioner on the 12th of July 1871, requesting the Board's instructions as to his responsibility connected with the warming of the plant houses, &c., with reference to the letter of the Board of the 29th of October 1867, before quoted, and expressing his opinion in favour of that arrangement. To this a reply was forwarded, explaining that under the new arrangements of the office, it appeared to the First Commissioner that the only manner in which the relations of the works and horticultural departments of the gardens could be properly maintained, was for the horticultural department to make requisitions to the office for such repairs, new buildings, or apparatus as might be, from time to time required, and for such requisitions as, on the examination of the Director of Works, might

be approved of, to be carried out under the supervision of one of the assistant surveyors of the department. On receiving this reply, Dr. Hooker forwarded a letter complaining, in general terms, of the acts of the First Commissioner, and claiming the privilege of bringing them under the cognisance of the First Lord of the Treasury. He was then requested by the First Commissioner to furnish the dates and particulars of the acts of which he complained. But having in his answer lunched out into various topics, without giving the precise information required, the First Commissioner contented himself with forwarding an official memorandum on the subject to the First Lord of the Treasury. An accident to one of the pipes having been the subject of complaint by the Curator, the First Commissioner instructed the Director of Works to inquire into it, in accordance with his duty as superintending officer of works. Dr. Hooker received notice of the proposed inquiry. The report of the Director of Works shows how necessary it is to place the entire works under the Works Department, and the First Commissioner gave directions accordingly to define more clearly the relations of the Director of the gardens to the officers of works, so as to obviate all future ground of dissension, or complaint; upon the principle that the botanist or horticulturist should make requisitions for what works are required, and that executive officers of works should be exclusively responsible for their execution, subject to the control of the Commissioners and of the Director of Works. The criticism of Dr. Hooker, the subsequent Report of the Director of Works, and a further Minute by the First Commissioner closed this business. The other works at Kew have been carefully revised and considered by the First Commissioner. On his first appointment he was requested to sanction a larger additional expenditure on a work which had been entrusted to the charge of the Director at Kew beyond the amount stated in the estimate. The Director was asked for an explanation, when it appeared that he had sent an explanatory letter, with his estimate, which had not been amended, so as to show the whole cost of the service; the proposed additional expenditure was thereupon sanctioned with the consent of the Treasury. Mr. Fergusson having suggested that a new staircase should be constructed at the back of the Museum, in substitution of the present one within the Museum, the assistant surveyor provided for it in his estimate for 1870-71, but as it was apparent to the First Commissioner that this would not remedy the difficulty and inconvenience that arose from a want of proper circulation of the public visiting the Museum, he struck the item out of the estimate. He afterwards directed the assistant surveyor to report on the construction of two staircases, one at each side of the Museum, to provide a more easy access and circulation, it being peculiarly within the province of the First Commissioner to determine what arrangements are best for the public convenience. On preparing the estimates for 1871-72 the assistant surveyor brought forward the estimate for the two staircases, but the First Commissioner finding the work more costly than was expected, and having regard to other expenditure, struck the item out of the estimate, with some others of minor importance. This project has not been renewed for reasons subsequently explained. The service for the supply of water at Kew, which embraces other places beyond the Gardens, was thoroughly investigated and reformed, under the guidance of the Director of Works, and improvements and economy thereby effected. Some other works of a trifling character were either dispensed with or improved. In the judgment of the First Commissioner, it is of great importance that the distinction and separation between the requisitions for services desired and the performance of them should be maintained throughout the administration of the Office of Works, so that the execution of works should be wholly under the supervision of the Director of Works. In the particular case of hothouses, to determine the nature of the climate required is the province of botany and horticulture; to provide the climate by artificial means is the province of the technical engineer, as is also the business of construction and repair. The science of generating and diffusing heat and of ventilation is not botanical, nor is it confined to hothouses, and any experience gained in one application ought to be made available for any other under the department. The Director of Works has to superintend the works for heating hothouses in various gardens and for heating buildings. He is peculiarly well qualified for the performance of this duty, and on a recent occasion he was expressly required to report for the Treasury on works of this kind in the Royal kitchen gardens at Windsor. The First Commissioner will not add to these remarks any verbal statements of Dr. Hooker, as he deems it more accurate to deal with the subject on the official records and the general principles by which the department should be regulated. The First Commissioner is convinced the least difficulty need not arise at Kew in carrying out the existing arrangements, which are necessary in the public interest, and he does not deem it right to

propose any changes. In consequence of the division of duties between the secretary and the Director of Works relating to the parks and gardens, the form of the estimate for that service was altered for the year 1871-72, to determine precisely the services under each, by introducing the sub-heads, "under the secretary," and "under the Director of Works;" but as this might make it appear that the Director of Kew Gardens was placed under an officer of the department, and not directly under the Commissioners themselves, the First Commissioner has expressed his willingness to submit the estimate to the Treasury in the form in use before the alteration was made. It is at the same time desirable to put an end to the somewhat irregular mode in which the estimates have been prepared, and communicated to the Director of Kew Gardens, and to provide in future that the assistant surveyor or Director of Works shall communicate with the Director of the Gardens, and obtain all the information that is necessary to enable them to form an opinion on any works, and that the First Commissioner shall, on the proposed estimates being submitted to him, make such inquiries of the Director of Kew Gardens as he may deem requisite; and after considering any representations the Director may desire to make, determine what estimates he will submit to the Treasury, and that as soon as the Treasury has settled the estimates, and laid them on the table of the House of Commons, they should be forwarded to the Director at Kew for his guidance.

MR. SMITH AND KENSINGTON GARDENS.

Having disposed of the general administration of Kew Gardens, the First Commissioner will notice one or two topics which Dr. Hooker has lately made the subject of remark and representation. Whilst the Bill relating to the addition of a part of Hyde Park to Kensington Gardens was before the House of Commons, Dr. Hooker and the Curator of Kew Gardens had been consulted about proposals to cut down or transplant some trees. The House of Commons voted a sum of money to carry out the work of adding to Kensington Gardens before the 31st March 1871. It was much delayed from various causes, and finally from the superintendent of the park falling ill of a sickness of which, after lingering some time, he died, so that at Christmas 1870 nearly the whole work remained to be done. As the season for completing the work was passing away, a telegram was sent on the 19th December 1870 requesting the Curator to meet the First Commissioner in Hyde Park at eight a.m. the next morning; this went direct to the Curator instead of to the Director. On the 20th December the First Commissioner made the following Minute: "Mr. Mann being reported too unwell to attend in the park, the First Commissioner directs that Mr. Smith be instructed to undertake the general superintendence of the works to carry out the approved plan. Dr. Hooker to be informed accordingly, and to arrange for Mr. Smith attending at the park as often as required. Mr. Smith will proceed under the direct instructions of the First Commissioner." Mr. Smith accordingly attended to make an inspection of the works, and give the requisite directions to the assistant superintendent of the park. On the 31st December the First Commissioner went to see Dr. Hooker at Kew to converse with him on current matters, but Dr. Hooker referred the First Commissioner to a letter he had written, which the First Commissioner had not seen, and assumed a tone which shortly brought the interview to a close. This letter, when afterwards seen by the First Commissioner, being, in his opinion, calculated to raise unnecessary and offensive controversy, the First Commissioner replied to it by a short Minute assuring Dr. Hooker of the real character of the transactions to which it referred. Dr. Hooker having again written on the subject, the First Commissioner forwarded a further Minute explaining that Dr. Hooker's letter was written under a misconception, and requesting him to obtain a report from the Curator respecting what had been done and could be done with the works at Kensington Gardens; and on this report being obtained, Dr. Hooker was informed that Mr. Smith's employment, which had, in fact, been suspended by a change of weather, should cease. Not having heard anything more of this transaction, the First Commissioner did not deem it necessary to enter into any further details. He had, in the first instance, supposed from Dr. Hooker's long connection with Kew Gardens, that he was perfectly able to manage them during the Curator's slight absences in visiting Kensington Gardens, but as soon as the First Commissioner was satisfied of his inability in this respect he put an end to the Curator's special employment. The First Commissioner regarded it as a question of public importance that any one employed under the Office of Works should make a considerable sacrifice to render whatever service could be performed to meet an emergency of which the First Commissioner was the proper judge, but he waived the discussion of the point then, and sees no occasion to revive it now. The First Commissioner would, however, point out, that in his view no person in the service can be justified in allowing any question by which he considers himself aggrieved to drop, and afterwards, when many of the facts and

circumstances which would have been fresh in the recollection of those concerned are imperfectly remembered, in reviving the subject as a grievance with new assertions. In this case the First Commissioner heard no more of Dr. Hooker's alleged grievance until the month of September 1871, when the First Commissioner declined to re-open the subject.

A "SURVEYOR OF PARKS AND GROUNDS."

At the end of 1870, the First Commissioner deeming the continued presence of the secretary in the office necessary, in consequence of the great and continuing increase of the business of the secretary's department, arising from development of the policy suggested by the First Commissioner to the Treasury, that all civil works, as opportunity offered, should be transferred to the department, and deeming it also expedient to establish a general comprehensive and continuous supervision over the expenditure on the horticulture of the parks and gardens under his charge, the First Commissioner considered it necessary that the arrangement by which the secretary was constituted an outdoor officer to superintend the parks and gardens should be revised, and he proposed to appoint a surveyor of parks and gardens who should undertake the secretary's duties in regard to them, but in a more technical manner. In any special question of style or taste in horticulture, the First Commissioner could still have had the benefit of the secretary's experience. Circumstances quite independent of Kew Gardens, rendered it necessary that this arrangement, if adopted, should be at once carried out, and the surveyor appointed. From the high character given by Dr. Hooker to the Curator of Kew Gardens, the First Commissioner selected him for recommendation for the office; but before recommending him the First Commissioner deemed it right to satisfy himself that the Curator possessed all the other qualifications which the First Commissioner deemed proper for the office, and for that purpose he had a long interview with the Curator, inquiring of him his views on every question affecting the supervision of parks and gardens; the result was highly satisfactory, but the Treasury declined to sanction the new office, and the proposal came to an end on the 29th December 1870. It would be unnecessary to notice further this subject, closed so long ago, were it not for the singular fact that Dr. Hooker revived this conversation after nine months, with the addition that the First Commissioner requested the Curator to keep it secret from him; this assertion being only a misapprehension of an observation of the First Commissioner that it was not necessary for the Curator to report, as the First Commissioner would himself communicate with Dr. Hooker on the subject. The First Commissioner would have been guilty of a dereliction of duty if he had recommended the Curator for promotion to an appointment without fully satisfying himself of the Curator's fitness, nor did he desire to use the Curator as a channel of communication with the Director on the subject.

(To be continued.)

THE LIBRARY.

THE BIRD.*

THIS is one of the series of beautifully illustrated works published by the Messrs. Nelson & Sons, some of which we have already noticed in the columns of THE GARDEN. There are, we believe, those who will pronounce it a transcendental and eminently unpractical book, as it is not in the least degree scientific or ornithological, but mainly sentimental. It is not a mere naturalist's description of any one bird or class of birds, such as is to be found in any of our numerous works on zoology, but a general consideration of all the ideas which the term "Bird" is capable of suggesting. In a spirit of the tenderest feeling, whose higher aim is to make mankind more thoughtful and humane, the author has well fulfilled his task of investing the bird-world with a charm and an interest which perhaps no other writer has ever expressed. He brings the bird before us "a sentient being, with its duties to perform, its mission to fulfil. We are shown what it has to fear and what to hope; what are the perils and what the consolations of its existence; how it possesses a faculty of combination and appreciation, of memory and reflection, which is something more than a cold mechanical instinct." Commencing *ab ovo*, the renowned historian presents us with a delightful picture of the nest-home, with the patient and self-inflicted captivity of the brooding mother during the period of incubation, and all

* "The Bird." By Jules Michelet. With 210 Illustrations by Giacomelli. London: T. Nelson & Sons.

the loving and attentive care of both parents for their helpless young. Then follow chapters on the power of flight, the instinct for migration, the triumph of song, and the various services rendered by many families of birds to the human race. In all these the author pleads powerfully for the protection and preservation of the birds, which the gardener is too much accustomed to consider only as his foes. No doubt it is sometimes provoking to lose a portion of one's Cherries or



other fruit in this way, but we ought to remember that, during all the rest of the year, the blackbirds and thrushes, which are mostly to blame in the matter, feed entirely on insects, and, from the numbers which they destroy, must render a service to our gardens to an extent of which we can perhaps form only a very feeble idea. We place the question here on the lowest ground of *quid pro quo* utility, and say nothing of the additional charm which our shrubberies and plantations derive



from the presence of the feathered songsters. Our own enjoyment, at least, of such places is always very much enhanced, when, while feasting the eye on the various forms of beauty presented by tree and shrub and flower, we can also listen to the sweet and cheerful strains of the happy choristers who sing unseen among the leafy branches.

For the birds of prey M. Michelet evidently has no love. In a gloomy chapter, whose title is "Death," he dwells strongly upon the unamiable characteristics of these tyrants of the air,

and assigns them a very inferior position in the scale of feathered perfection. "The agents of death, the murdering species, are here replaced very low in the hierarchy remitted to the rank which is rightly theirs. They are the most deficient in the two special qualifications of the bird—nest-making and song. Sad instruments of the fatal passage, they appear in the midst of this book as the blind ministers of nature's hardest necessity. The eagle, then, is in these pages dethroned, the nightingale reigns in his stead." For the harmless tribes, however, his affection appears to know no bounds, and the secret of this is manifest in the following extract:—

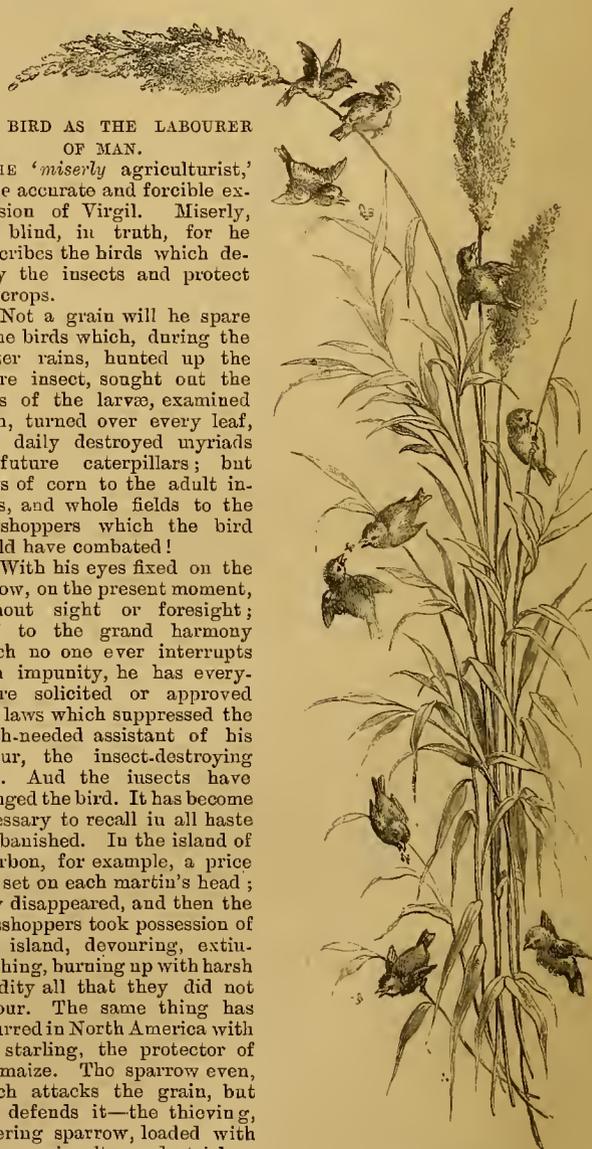
THE BIRD AS THE LABOURER OF MAN.

"THE '*miserly* agriculturist,' is the accurate and forcible expression of Virgil. Miserly, and blind, in truth, for he proscribes the birds which destroy the insects and protect his crops.

"Not a grain will he spare to the birds which, during the winter rains, hunted up the future insect, sought out the nests of the larvæ, examined them, turned over every leaf, and daily destroyed myriads of future caterpillars; but sacks of corn to the adult insects, and whole fields to the grasshoppers which the bird would have combated!

"With his eyes fixed on the furrow, on the present moment, without sight or foresight; deaf to the grand harmony which no one ever interrupts with impunity, he has everywhere solicited or approved the laws which suppressed the much-needed assistant of his labour, the insect-destroying bird. And the insects have avenged the bird. It has become necessary to recall in all haste the banished. In the island of Bourbon, for example, a price was set on each martin's head; they disappeared, and then the grasshoppers took possession of the island, devouring, extinguishing, burning up with harsh acridity all that they did not devour. The same thing has occurred in North America with the starling, the protector of the maize. The sparrow even, which attacks the grain, but also defends it—the thieving, pilfering sparrow, loaded with so many insults, and stricken with so many maledictions—it has been seen that without him Hungary would perish; that he alone could wage the mighty war against the cockchafers and the myriad winged foes which reign in the low-lying lands: his banishment has been revoked, and the courageous militia hastily recalled which, if not strictly disciplined, are not the less the salvation of the country.

"No long time ago, near Rouen, and in the valley of Monville, the crows had for a considerable period been proscribed. The cockchafers, accordingly, profited to such an extent—their larvæ, multiplied *ad infinitum*, pushed so far their subterranean works—that an entire meadow was pointed out to me as completely withered on the surface; every root of grass or herb was eaten up; and all the turf, easily detached, could be rolled back on itself just as one raises a carpet.



"In the exuberant fecundity of the Torrid Zone, the insects, those terrible destroyers of plant-life, carry off the superfluous. They are there a necessity. They ravage among the ever prodigious abundance of spontaneous plants, of lost seeds, of the fruits which Nature scatters over the wastes. Here, in the narrow field watered by the sweat of man, they garner in his place, devour his labour and its harvest; they attack even his life.

"Do not say, 'Winter is on my side; it will check the foe.' Winter does but slay the enemies which would perish of themselves. It kills especially the ephemera, whose existence was already measured by that of the flower, or the leaf with which it was bound up. But, before dying, the prescient atom assures the safety of its posterity, it finds for it an asylum, conceals and carefully deposits its future, the germ of its reproduction. As eggs, as larvæ, or in their own shapes, living, mature, armed, these invisible creatures sleep in the bosom of the earth, awaiting their opportunity. Is she immovable, this earth? In the meadows I see her undulate—the black miner, the mole continues his labours. At a higher elevation, in the dry grounds, stretch the subterranean granaries, where the philosophical rat, on a good pile of corn, passes the season in patience.

"All this life springs forth at spring-time. From high, from low, on the right, on the left, these predatory tribes, *échelonné* by legions which succeed one another and relieve one another each in its month, in its day—the immense, the irresistible conscription of nature—will march to the conquest of man's works. The division of labour is perfect. Each has his post marked out, and will make no mistake. Each will go straight to his tree or his plant. And such will be their tremendous numbers, that not a leaf but will have its legion.

"What wilt thou do, poor man? How wilt thou multiply thyself? Hast thou wings to pursue them? Hast thou even eyes to see them? Thou mayest kill them at thy pleasure; their security is complete: kill, annihilate millions; they live by thousands of millions! Where thou triumphest by sword and fire, burning up the plant itself, thou hearest all around the light whirring of the great army of atoms, which gives no heed to thy victory, and destroys unseen.

"Listen. I will give thee two counsels. Weigh them, and adopt the wiser.

"The first remedy for this, if you resolve upon fighting your foe, is to poison everything. Steep your seeds in sulphate of copper; put your barley under the protection of verdigris. This the foe is unprepared for; it disconcerts him. If he touches it, he dies or sickens. Yon, also, it is true, are scarcely flourishing; your adventurous stratagem may help the plagues which devastate

our era. Happy age! The benevolent labourer poisons at the outset; this copper-coloured corn, handed over to the baker, ferments with the sulphate; a simple and agreeable means of 'raising' the light *pâte*, to which, perhaps, people would object.

"No; adopt a better course than this. Take your side. Before so many enemies it is no shame to fall back. Let things go, and fold your arms. Rest, and look on. Be like that brave man who, on the eve of Waterloo, wounded and prostrate, contrived to lift himself up and scan the horizon; but he saw there Blucher, and the great cloud of the black army. Then he fell back, exclaiming, 'They are too many!'

"And how much more right have you to say so! You are alone against the universal conspiracy of life. You also may exclaim, 'They are too many!'

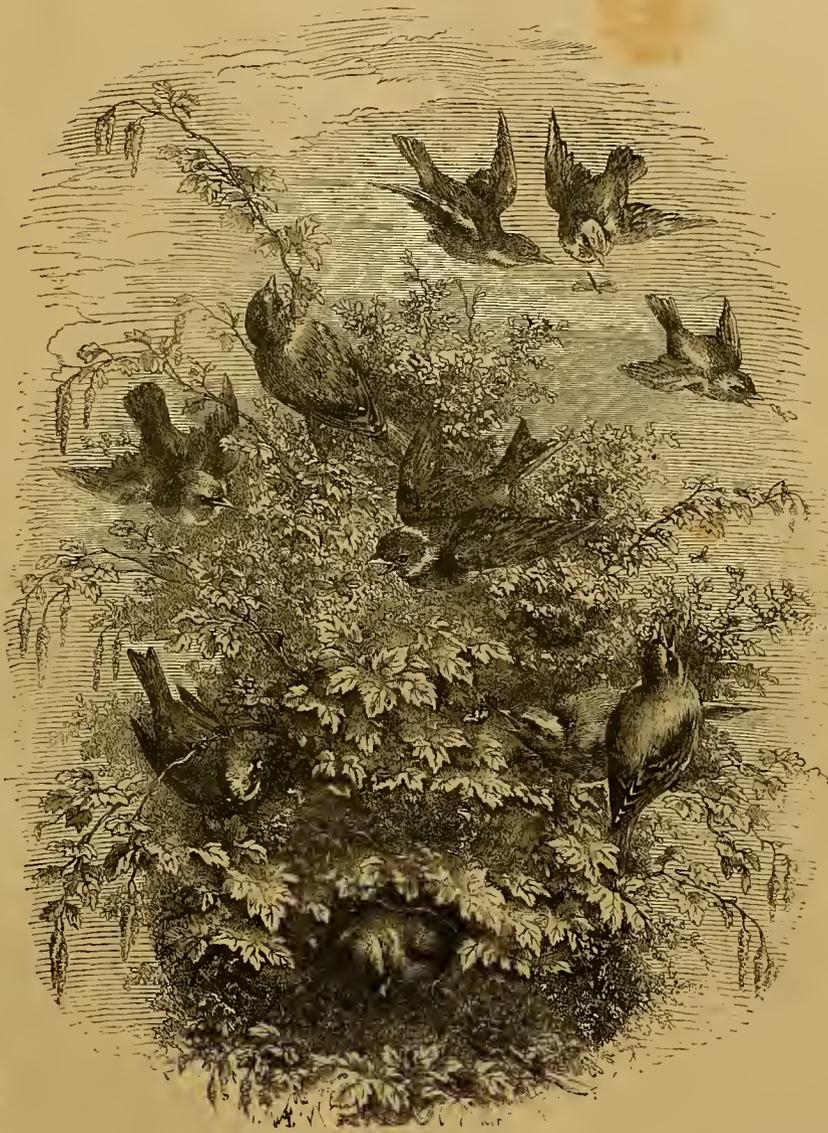
"You insist. See here these fields so full of inspiring hope; see the humid pastures where I might please myself with watching the cattle lost among the thick herbage. Let us lead thither the herds!

"They are expected. Without them what would become of those living clouds of insects which love nothing but blood? The blood of the ox is good; the blood of man is better. Enter; seat yourself in their midst; you will be well received, for you are their banquet. These darts, these horns, these pincers, will find an exquisite delicacy in your flesh; a sanguinary orgie will open on your body for the frantic dance of this famished host, which will not relax at least from want; you shall see more than one fall away, and die of the intoxicating fountain which he had opened with his dart. Wounded, bleeding, swollen with puffed-up sores, hope for no repose. Others will come, and again others, for ever, and without end. For if the climate is less severe than in the zones of the South, in revenge, the eternal rain—that ocean of soft warm water, incessantly flooding our meadows—hatches in a hopeless fecundity those nascent and, it may be added, ever greedy lives, which are impatient to rise, to be horn, and to finish

their career by the destruction of superior existences."

The foregoing shows how closely the author identifies himself with his subject, and how deep are his sympathies with all that concerns his beloved birds. We do not think that anyone can rise from the perusal of this book unimpressed by the high purpose and the benevolent tone which pervade it.

Of the illustrations, which occur on almost every page, we cannot speak too highly. By the kind permission of the publishers, we are enabled to give two or three specimens of them here, and, we may add, that the volume is in all other respects got up in a style fully in keeping with the exquisite finish of M. Giacomelli's admirable engravings.



THE HOUSEHOLD.

VEGETABLE DISHES IN AMERICA.

At a time when people are beginning to turn their thoughts to our never half-appreciated, never half-utilised, varieties of wholesome vegetable food, the following interesting article will repay perusal. It is written, as we can testify, by one thoroughly acquainted with the subject.

The beauty of American women—I beg their pardon, ladies—has become almost proverbial. Since the late ingenious Nathaniel Hawthorne denounced the English matron in terms scarcely so chivalrous as those in general use among American gentlemen when speaking of the fair sex, and praised to the skies “the trim damsels of our native land,” American beauty has made its mark in the world’s history. Dainty Transatlantic dames, glorying in tiny hands and stepping mincingly in almost impossible *bottines*, have compelled the aristocratic inhabitants of the “effete oligarchies” to own the power of a delicate intellectual type of beauty—often, alas! too evanescent. The middle-aged, and now unhappily obese, writer was once smitten “out West” by a pair of eyes, brilliant enough to penetrate through any known quantity of adipose tissue. The said eyes belonged to a very trim damsel indeed. Her knowledge—superficial, perhaps, but certainly showy—of all things in heaven and earth was positively astonishing. Her pace on the piano was wonderful; her grace as a “skatist,” and her proficiency in the “Dutch roll” were crushing. It must be confessed that her conversational talents, voluble as they were, were mostly of an interrogative nature. In the course of one short half-hour’s conversation with this gifted young lady, *et al.* seventeen, I was very thoroughly and completely pnt “through my facings” in theology, history, statistics, music, geology, painting, Mormonism, the comparative merits of America and the Old Country, the last new shape of bonnet, the last new novel, the Reverend and facetious Henry Ward Beecher’s last sermon, the prospects of the Erie Railway, Hans Breitmann, Bret Harte, Shakespeare, and the musical glasses. This brilliant combination of Venus and Minerva was irresistible. I thought it best to surrender at discretion.

Next day, however, my feelings received a shock as violent as it was unexpected. Among vegetables set forth for dinner was green corn, consisting of the tender ears of sweet corn—a peculiarly delicate variety of Maize. The “cobs,” carefully boiled, were served up in a napkin, and presented a very pretty appearance. My horror may be imagined when I saw the fair being of whose bow and spear I was the helpless captive seize upon a corn cob with her jewelled fingers, smear the vegetable object with pepper, salt, and butter, and then proceed—grasping the *corpus delicti* at both ends like a Pandean pipe—to gnaw the dainty nascent corn from its parent ear. I did not miss the next train. Much revolving these things, and groaning *imo sub pectore*, I rolled rapidly away eastwards, and entering into conversation with an intelligent person—much given to the chewing of tobacco—who was very anxious to know whether I was in dry goods or in oils, I dexterously turned the conversation upon green corn. The information candidly imparted to me was to this effect: That the habit of gnawing the corn from the ear was based upon a sound principle, *i. e.*, that a delicious saccharine substance adheres to the corn, and can only be thoroughly enjoyed by the gnawing process; that the effete inhabitants of the great city of New York, who preferred to cut the corn from the ear, were mere degenerate imitations of “Europians,” and that to such miserable creatures the true flavour of green corn was utterly lost. As a philosopher I was compelled to make the experiment, but without witnesses. It was not “a success.” The saccharine matter was there, as predicted, but the corn (or rather the tender husk thereof) inserted itself into the dental interstices in a singularly aggravating and pertinacious manner. Thenceforth I followed the practice of the degenerate New Yorkers, and cut the corn from the cob, mixed it with some stewed Tomatoes, and contrived to “worry it down.” It is recorded that a hungry Irishman tasting green corn for the first time was delighted with it, and handing the well-cleaned corn cob to the waiter, shouted, “Hurry up, and put some more Peas on my stick!” *Succotash* is a very agreeable combination of green corn and string Beans; or, still better, Lima Beans. The vegetables are first boiled, and then tossed in a stewpan with a noble piece of butter and a little pepper and salt. “New chums” are wont to hear many wonderful stories of the succotash tree. Vegetables of all kinds are much appreciated on the “other side.” Carrots, Parsnips, Turnips, and fresh young Beets are very welcome to all judicious eaters, and justly so, inasmuch as almost all vegetables, excepting green Peas, flourish under the burning sun of the New World. These latter, however, develop the woody fibre too rapidly, and the result is that it is almost impossible to procure—

except from your own garden—a dish of eatable green Peas; and at Delmonico’s, the French “canned” Peas are almost invariably preferred to “domestic” productions of the same kind. But Asparagus—possibly on account of its rapid growth near the sea—is excellent in quality and abundant in quantity. Lovers of this delicious and wholesome vegetable have ample opportunity for indulgence in *purée d’asperges*, *consommé aux pointes d’asperges*, *omelette aux asperges*, and, perhaps best of all, in cold Asparagus with a light salad dressing for breakfast. The last named meal is “a big thing” in America. A modest English breakfast, composed of dry toast, eggs and bacon, and watercresses, fades into insignificance when compared with the Homeric meal devoured in America at the early hour of eight or nine a.m. During the summer months Tomatoes (raw) are never absent, and are eaten either with salad dressing or with vinegar and powdered sugar. In the heat of burning summer an agreeable triple salad is often made in this wise: take a huge salad bowl or a punchbowl of dainty china, rub it with a Shallot, and then dispose in layers raw Tomatoes (not quite ripe), thin films of Bermuda pink-skinned Onions and sliced Cucumbers. The combination is delicious, and to a palate parched by an average temperature of 80° Fahr. is inexpressibly grateful. This triple salad is eaten with a light dressing of oil, vinegar, pepper, and salt, and is generally consumed as a *hors d’œuvre*. Cantaloupe and Musk Melons are also eaten as an agreeable preparation for the matinal meal, and are seasoned with a little pepper and salt. Breakfast not only begins but ends with fresh fruit, treated, however, in a somewhat different manner to the initiatory Melon or Peach. A sumptuous banquet of Melon, Spanish mackerel, beefsteak (without which no American breakfast is complete), outlets, eggs scrambled with thin filaments of smoked beef, muffins, stewed clams, and dry toast, is frequently concluded with a pile of Strawberries, blushing rosy red through their veil of luscious cream. No system is at once so agreeable and so wholesome as this one of consuming a quantity of fresh vegetables and fruit in the early morning; the ancient dictum that fruit is golden in the morning, silver at noon, and leaden at night, is quite sound, and should never be forgotten by those who would escape the demon of dyspepsia. Unfortunately, this excellent rule is only partially followed in America, and is utterly ignored at dinner, where it is not unusual for the shuddering spectator to behold a man devour a huge slice of Water Melon at the conclusion of his evening meal, wash it down with a huge goblet of iced water, and then fall—tooth and nail—upon a dish of iced cream, winding up the whole extraordinary performance with a cup of boiling hot tea. No stomach and no complexion in the world could survive a series of banquets such as this. The Egg-plant, or Aubergine, is extensively cultivated in America, and is susceptible of varied treatment at the hands of the cook. As in France, this fine vegetable is often stuffed and stewed, but is more generally eaten fried. The Egg-plant is cut into slices and steeped for some hours in salted water, and is then fried in butter. When well cooked it is very light and toothsome, but must be eaten while very hot, as it soon settles down into a tough and leathery condition. It is also often mashed and served *au gratin*. I will not plunge into the sublime mystery of *aubergines farcies*, as this excellent dish is well known to French cooks, and in the preparation of the *farce* and general treatment may be varied *ad infinitum*. Squash, more poetically designated Cymbelin, is a peculiarly American vegetable. It assumes the form sometimes of a Melon and sometimes of a French horn, and I believe that the Trumpet-squash is a prime favourite. These glorified Pumpkins must be carefully pared, cut in pieces, and the seeds and strings should be removed. They are then boiled in salt and water, and passed through a cullender. Served like mashed Turnips, they are exquisitely light and feathery, and bear about the same relation to that homely vegetable as a fleecy summer cloud to a good, solid, thick, old-fashioned November fog. Potatoes—funnily called “Irish Potatoes” in the very land of their birth—are consumed in all shapes; but it would be out of place for me to dilate upon the popular esculent abhorred of Banting.

There is, however, another vegetable very unlike Sir Walter Raleigh’s gift to Ireland, *i. e.*, the Sweet Potato. This tuber resembles a large Dahlia root, and is utterly dissimilar from the better known “Irish” variety. Sweet Potatoes may be either baked, boiled, fried, or best of all roasted in wood ashes. When cut open they present a fine golden, mealy appearance, and should be plentifully anointed with butter. Their excessively sweet taste makes them “impossible” when combined with any kind of meat; but eaten alone—with salt, pepper, and abundant butter as aforesaid—they are very good and satisfying withal. The coloured citizens of the United States are “death” on Sweet Potatoes. All kinds of green or string Beans are eaten with great gusto in the States, but the Beans must—like the proverbial Scotchman—be “caught” young, or the stringiness will be only too perceptible. Lima Beans,

however—whereof the Bean only is eaten—are altogether excellent, and are best dressed à la maître d'hôtel or à la Lyonnaise. Salsify—called oyster plant in America—is a truly delicious vegetable. Scraped, boiled, and fried in a fine batter—wherein there has been no stint of eggs—it is admirable, and, like very few things, bears out the promise of its name. It is not impossible that a blind man with a palate seared by a long course of "Bourbon" might mistake well-dressed oyster plant for the divine bivalve itself.

Sauerkraut has been rendered so popular in America by the Teutonic immigrants, that, like *lager-bier*, it has become a national institution. Even at Delmonico's, the very stronghold of delicate cookery, a *choucroute garnie* is by no means an unfashionable dish. It must not be forgotten that New York—or the German part of it rather—ranks as either the fifth or sixth German city in the world, so numerous is the Teutonic population. Whole wards are entirely tenanted by Germans, and signs bearing the magical words Lagerbier and Schweizer Käse stare one in the face at every corner. The truth of the maxim "cœlum non animum mutant qui trans mare currunt" is admirably borne out by the Germanic race. Where the German goes there go his manners and customs with him; his industry, his frugality, his tobacco, his music, his pleasure gardens, his sausages, and *schwartzbrod*, his eternal *kalbsbraten*, his herring salad, and, above all, his *sauerkraut*. To prepare the latter celebrated dish, take a dozen fine white winter Cabbages (I think they are called Drumheads in this country), and shred them very finely—every vestige of "stump" having been first carefully removed. [A machine like a huge Cucumber slicer is generally used for the shredding process when a large number of Cabbages is to be cut up.] Add to the shredded Cabbages a pound of salt, an ounce of juniper berries, and some whole pepper, and press the whole down as closely as possible in a cask; lay a cloth over it, then a wooden cover, and upon that a heavy weight. Let it stand in a warm cellar for two months, and it will be fit for use, and should then be removed to a cooler place. It is generally stewed very slowly with some gravy until quite tender, and is then served under pork, ham, bacon, or sausages, either boiled or broiled. When served with both sliced pork and sausages, it becomes the well-known and much-esteemed *choucroute garnie* previously referred to.

The confection of a herring salad is not a thing of the moment, but demands much previous thought and careful preparation. The theory of herring salad is based upon the solubility of fishbones in vinegar, and the "keel" must be "laid" by taking some Dutch salt herrings and laying them in a strong *marinade*, composed of seven parts of vinegar to one of oil, a clove or two of Shallot, plenty of sliced Onions, a Bay-leaf, and some whole pepper. In the course of a few days the small bones of the herrings will become perfectly tender, and may be unconsciously eaten with the rest of the fish, which—the backbone having been removed—should be cut into neat fillets. A salad is now made of cold boiled Potatoes (cut very thin), and the small green stuff called *kornsalat* by the Germans, and field salad by the Americans. It grows wild in every cornfield, and can often be obtained in Covent Garden Market. A slight *garniture* of finely-minced Parsley, Chives, &c., may be added; and the salad should be dressed with the usual four elements, *i.e.*, three spoonfuls of oil to one of vinegar, pepper and salt to taste. A portion of the herring should be mixed in with the salad, and the remainder of the fillets disposed neatly over the top, alternating with "streaks" of pickled Beetroot, and the white and yolk of hard-boiled eggs, all finely minced. Herring salad is deserving of very high commendation, for—like very few things in this world of sorrow—it is both cheap and good.—*Queen*.

Soyer's Breakfast Mushrooms.—We are indebted to Dr. Bull, of Hereford, for reminding us of the omission of the following capital receipt in our list of mushroom receipts last week:—Place some fresh-made toast, nicely divided, on a dish, and put the half-grown mushrooms, stemmed and peeled upon it; add pepper and salt judiciously, and put a small piece of butter on each. Then pour on each mushroom a teaspoonful of milk or cream, and add one single clove for the whole dish. Place a bell-glass over the whole (or an inverted basin will serve the purpose less elegantly). Bake for twenty minutes, and serve up at once, without moving the glass until it comes upon the table, so as to preserve the heat and the aroma, which on lifting the cover will be gratefully diffused. We have also to thank Dr. Bull for the original receipt of curried mushrooms, published in last week's GARDEN.

The Best Crap.—A Scotch nurse was out with a baby in her master's garden, and the gardener inquired, "Is't a laddie or a lassie?" "A laddie," said the maid.—"Weel," says he, "I'm glad o'that, for ther's ower mony women in the world."—"Hech, mon," says Jessie, "did ye no ken ther's aye maist sown o' the best crap."

THE FLOWER GARDEN.

THE SNOWFLAKES.

(LEUCOJUM).

THESE pretty bulbous plants belong to the same family as the Snowdrops, to which they bear a considerable general resemblance, but are larger in all their parts. The spring Snowflake



Spring Snowflake.

(*L. vernalis*) blooms about a month later than the Snowdrop, bearing its usually solitary flowers on stalks from 4 to 6 inches high. The fragrant drooping flower resembles that of a large Snowdrop an inch long, the tips of the petals being well marked with a green or yellowish spot. The leaves are ribbon-like, nearly $\frac{3}{4}$ inch across, and, after the plant has flowered, attain the length of nearly a foot. Its native habitat was long supposed to be confined to Central Europe, but within the last three or four years, it has been discovered "on the Greenstone

heights, in the neighbourhood of Britford," under circumstances which have led to the conclusion that it may possibly be indigenous. It is an excellent subject for rockwork, and no less valuable as a border plant, thriving in a light, rich, and well-drained soil, and is easily multiplied by separation of the bulbs.

The summer Snowflake (*L. æstivum*) is a much taller and more vigorous plant, bearing its flowers



Summer Snowflake.

on stalks from 1 foot to 1½ foot high. The flowers resemble those of *L. vernalis* in size, shape, and colour, but have the tips of the petals marked with green both inside and out, and are always produced in clusters of from four to eight blooms on each stem. The leaves, which are very numerous, are more than a foot long, and in shape are like the leaves of Daffodils. It blooms early in summer (in many places before spring has ended) and forms a pleasing object either in the the mixed border or on the margins of shrubberies, where, in company with

Solomon's Seal, the grace of its pendent flowers will perhaps be even better appreciated. Originally introduced from Central and Southern Europe, it has long been naturalised in England, particularly on the banks of the Thames between Woolwich and Greenwich. It thrives in almost any kind of soil and is readily multiplied by separation of the bulbs.

Another Snowflake (which was long supposed to be a form of *L. æstivum*, and is known in gardens under the name of *L. pulchellum*) is *L. Hernandezii*, a native of Majorca and Minorca. This grows to about the same height as *L. æstivum*, but has narrower leaves, flowers only half the size and usually not more than three on each stem; it also flowers nearly a month earlier. Being much inferior in its appearance to *L. æstivum*, it is not much cultivated. Those, however, who wish to grow it, can treat it in the same manner as *L. æstivum*.

HARDY FLOWERS IN 1872.

THIS year has been somewhat unfavourable for gardening, particularly in all that relates to tender bedding plants. A little more severity, and bedding out in the ordinary sense would have been impossible. The beds in Hyde Park were not, in many cases, filled till towards the middle of July, and soon the shortening days will put an end to their beauty. Most clear it is, therefore, that in such seasons as the present, even the poor ordinary blaze of colour which rewards the flower gardener for his great expense and trouble is scarcely, if at all, attainable. He wearily waits for good weather to put out his plants—till after the spring and early summer have past, and then they have not time to fill the beds before they are cleared off by King Frost, or are brought into the house to save them for another year. In such seasons how fares it with hardy flowers? Better than ever. Some might, perhaps, think that a season inclement for one class of plants would be so for another; but such is not

the case. Hardy plants have never been seen in such healthy vigour or abundant bloom as during the present season. Everywhere throughout the country, while the bedding out gardener has been bemoaning his fate, and gazing at his empty or half-covered beds, the possessors of anything like a collection of hardy flowers have been rejoicing over their exuberant beauty and long-continued bloom. By the term "hardy flowers" we mean no limited class, but a whole galaxy of beauties, which, we think, should be in every garden. All flowering shrubs we include under this heading. Mainly, however, it applies to the Anemones, Columbines, Harebells (Campanula), Delphiniums, Dicentras, Gentians, Day Lilies, Irises, Everlasting Peas, Linums, Lychnises, Evening Primroses, Phloxes, Primulas, Saxifrages, Sedums, Silenes, Statice, Veronicas, Violets, the hardy Crinums, Lilies, Daffodils, Scillas, Adonis, Anbrietias, Daisies, the Dianthus tribe in great variety, the Evergreen Rock Roses, Forget-me-Nots, and Pentstemons, and the numerous other ornamental flowers which are known as "herbaceous and Alpine plants." The reason of the great beauty displayed by these plants in a wet and cloudy season like that now passing away from us is not far to seek. They are mostly natives of the nplands of cool or temperate countries, where they are accustomed to abundant moisture in spring and early summer from snow water or copious rains, and to cool moist breezes on the high mountain meadows or copses or woods. Frost is to them no danger, except perhaps when very biting indeed, and then only to their young leaves in spring. Cold rains simply impart greater vigour and freshness. In our dry summers they sometimes suffer from want of water, as there are, as a rule, no provisions made in our gardens to guard against drought. But in our cold and bad seasons they will never fail us. Clearly then, no matter what our desires respecting "bedding out" may be, it is not well to neglect the very families of plants suited, above all others, to a cold and cloudy climate. Their presence need not prevent attention being given to beauties that require more attention as well as more sun.

Amarantus salicifolius.—This has answered the most sanguine expectations formed of it, at least about London. It is certainly one of the finest plants that has been added to our flower gardens for many years. Few things can surpass the elegance and grace of this plant when used as a centre to small flower beds filled with dwarf-growing plants. In Messrs. Veitch's Nursery, Chelsea, may now be seen groups of this Amaranth planted out of doors. Last year a border was specially prepared for it, and well enriched, where it grew strongly, but did not colour so well as expected. This year several groups and centre pieces to small beds are planted in light soil, and the same rich border again filled with them. Under both circumstances they have grown well, but those in the light soil have assumed a most brilliant red colour, the ends of all the branches and the tops of the plants presenting the appearance of great fiery red tassels; those in the rich soil have grown a little stronger than the others, but they have not coloured nearly so well as those in the poor soil.—W. F.

Delphinium bicolor grandiflorum.—The reference to Delphinium formosum by "A. D." (see p. 51) induces me to ask how it is that the plant in question, which has no doubt done good service in its day, should still continue to be grown, when a much better plant is available for like purposes. I allude to Delphinium bicolor grandiflorum. Probably as D. formosum is commonly raised from seed, there are various forms of it in gardens, but in the original plant, which I had direct from the raiser, the centre of the flower is tinged more or less with purplish blue. In D. bicolor grandiflorum, which possesses the same general habit, the eye is almost pure white, and a good spike is consequently far more effective than one of formosum. It comes true from seed, and is in every sense a most desirable substitute for the older plant. I avail myself of the opportunity of thanking "A. D." for his good opinion of Delphinium nudicaule. He is quite correct in stating that it should be strongly grown, and with a view to this, seed should be sown in autumn, the plants being kept as cool as possible during winter, to prevent premature flowering.—W. THOMPSON, Ipswich.

Rain-Proof Flowers.—At the head of these staud the herbaceous Phloxes. They are blooming with a continuity, a strength, and a purity of colouring this season that I have never seen equalled. The latter characteristic is very peculiar. The rain seems to wash the colour out of other flowers; it looks as if it laid more and fresher beauty on the Phloxes. All the strains seem the brighter and the truer the oftener they are washed, but especially the lilacs and the purples; these have a depth and a delicacy of tint quite unusual. Most of us know to our sorrow how easily most white flowers are tarnished by heavy rains; but the purest white Phlox bears the drenching downpour unruined and unspotted. The Golden Rod is

quite a different kind of flower, presenting but a tiny surface for water to damage, and it keeps its cheerful orange face bright and clean amid floods of rain. Dahlias, especially Floribunda nana, stand washing well; and Hollyhocks will bear a great deal of rain pretty bravely if the precaution is taken to thin the flowers on the spike for draining the water off those that remain. Among Pelargoniums, the only varieties that can endure the wet creditably are the ivy-leaved kinds and Mangles' variegated, which is the most beautiful and useful of all Pelargoniums for hedging and bouquet work. As for tricolors, bicolors, and bronzes, the leaves of most seem to lose colour by the drenching rain. The flowers of these and of nearly all the zonals prove traps for holding the rain, which quickly spots and mars the beauty and rots the substance of the flowers.—T.

HARDINESS OF PLANTS.

PERSONS interested in trying what plants will survive the winter in the milder parts of Britain, will probably find an aid in the following list of plants, which, in the winter of 1870-71, withstood without injury 15° Fahr. of frost in the open air in the Botanic Garden at Brest:—

Chloridopsis Blanchardiana Bambusa nigra viridi- glaucescens aurea violascens gracilis Arundinaria falcata Paspalum dilatatum Gymnorrhiza latifolia Pennisetum longistylum Cyperus asperifolius vegetus Commelina tuberosa Acorus gramineus Sauromatum guttatum Arum pictum Chamaerops excelsa humilis Tricyrtis hirta Xerotes longifolia Smilax horrida Dracaena congesta Dianella carulea Ruscus androgynus Aspidistra lurida Rhoda japonica Tritoma Uvaria media Burchelli Phormium tenax Zephyranthes candida rosea Hypoxis villosa Sisyrinchium laxum convolutum Morea iridioides Agave americana Iris sinbiata Pardanthus chinensis Anomatheca cruenta Babiana plicata Gladiclus cardinalis	Antholyza ringens Meriana Watsonia rosea All the Sparaxis, Ixias, and Tri- chonemas Tritonia aurea Wachendorfia thyrsiflora Sagittaria chinensis lanceifolia Aponogeton distachyon Chamaepeuce diacantha Helichrysum orientale Plagiis grandiflorus Pyrethrum cinerariifolium Borrhicia frutescens Erigeron quercifolium Eupatorium micranthum Aster carolinianus Cephalaria rigida Viburnum odoratissimum grandiflorum Paderia fucida Rhynchosper- mum jasminoides Convulvulus Cneorum mauritanicus Myosotis azoricus Cestrum roseum Lyctum afrum Solanum jasminoides Phygliis capensis Penstemon gentianoides Diplacis glutinosus Veronica Lindleyana salicifolia decussata Lippia chamedrifolia canescens citriodora Teucrium regium Prostanthera lasiantha Salvia Grahami caulicifolia Samolus littoralis	Rhododendron arborescens argenteum Azalea indica ledifolia Diospyros Kaki Olea europaea ilicifolia Osmanthus aquifolius Ilex Dahoon Thea sinensis Erodium geifolium Oxalis Deppei fabaeifolia versicolor Melianthus major Pistacia Lentiscus Rhus semi-alata Ungaria speciosa Cissus orientalis Iberis sempervirens Akebia quinata Kadsura japonica Illicium anisatum Urtica nivea Boehmeria cylindrica Muhlenbeckia nummularia Ampelgoum chinense Boussingaultia basellifolia Ercilia spicata Megasca ligulata Aralia papyrifera Sieboldii trifoliata Garrya elliptica macrophylla Aristolochia altissima Fuchsias, many kinds Zauschneria californica Lagerstromia indica Lythrum alatum Nesaea salicifolia Hovenia dulcis	Ziziphus sativus Palurus aculeatus Melaleuca thymifolia Eucalyptus resinifera viminalis Callistemon speciosum rigidum viridiflorum Leptospermum lanigerum Beckea virgata Myrtus communis Eucenia apiculata Eriobotrya japonica Photinia serrollata Raphioplepis salicifolia Neillia thyrsiflora Margaricarpus setosus Acacia sericea Anagyris fucida Cissus tomentosus Anthyllis Hermannia Medicago arborescens Psoralea glandulosa Erythrina laurifolia Edwardsia chilensis Cassia falcata Quercus glabra Cupressus lusitanica funebris Callitris quadri-valvis Thuopsis dolabrata Libocedrus chilensis Juniperus bermudiana Ephedra altissima Aristotelia Macqui Acanthus lusitanicus Eucomis punctata Richardia ethiopia Rubus australis Begonia discolor
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These plants had no covering nor any protection whatever from walls, houses, &c., but were fully exposed in the open ground to all the rigours of the winter.

SOLANUM WARSCWICZII.

THIS very fine ornamental plant resembles *S. macranthum*, but has a lower and more thickset habit, and branches more at the base. The leaf-stalks and upper branches are of a red colour, glandular, and scaly, and the flowers are white and small. The stem is armed with strong slightly recurved spines, and both the stems and the petioles of the leaves are covered with a very dense crop of short stiff brown hairs scarcely rising above the skin. Among *Solanums* this is one of the best bedding kinds: isolated specimens, when well grown, also form striking objects. It is easily propagated by



Solanum Warscewiczii.

means of cuttings in early spring. When struck, they should be shifted as often as they require that attention. Thus treated they make good plants by the middle of May.

Manure for Roses.—I am a lover of Roses, and at the back of my cottage I have a strip of ground measuring only about 50 feet by 16, in which I have crammed over a hundred varieties. Last year they were magnificent; this season I have had an abundance of flowers, but few good ones, not from bad pruning, I think, but from want of manure; I can't give them the right thing without wheeling every bit through the house, which is held to be objectionable. If you, or any of your correspondents, will tell me what artificial stuff I can best feed them on, and how to use it, I shall be grateful. I may add that while I can grow Céline Forestier tolerably well, I cannot persuade Maréchal Niel or Boule d'Or to look at me. What is the secret?—G. B. [Will some of our readers kindly answer this question? With regard to the manure, Mr. Hole, to whom the above was sent, says: "If I am to advise Mr. B. in accordance with the course which I should myself pursue, were his position mine, I should say, 'send Mrs. B. to the seaside, and wheel some good manure through the house.'"]

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Swainsonia Osborni.—This pretty New Holland plant thrives freely with me against warm walls planted in rich light earth. It is now very useful for cutting as well as a charming ornament to low walls.—J. M. D.

Aubrietia as a Wall Plant.—In Mr. Fennessy's nursery at Kilkenny I have just seen a wall almost covered with long wiry-like tufts of this plant rooted firmly in its surface. The effect in spring must be very beautiful. Imagine some of our old fern-covered walls or sunk fences draped with the tufts of lovely blue of the "purple Arabis," as they call it in London. To establish it we need only sow the seed in any mossy or earthy chinks in autumn or spring.

Wigandia Vigieri.—This seems to be the most vigorous grower, the hardiest, and therefore the most useful of the kinds in cultivation. In my garden in Warwickshire, it has now, notwithstanding the wretchedly cold and wet season, enormous leaves without a spot of any kind showing evidence of suffering. I raise it from seed sown in January, and grow it on quickly and well in warm quarters till May, when I harden it a little, planting it out as early in June as the weather will permit; it has a deep rich soil.—H. C.

Alonsoa Warscewiczii.—Let me recommend those who wish for a "new sensation" in bedding effects, to try this plant. Its colour is uncommon, very soft, yet very effective, being a delicate poppy-red. I picked out a large patch of it at a good distance off, upon the Dedham seed-farms in the end of July, and wondered what it could possibly be until I got quite close to it. In habit it reminds one of that old-fashioned plant called *Celsia*, and it is a remarkably free bloomer. It can be propagated either from seeds or cuttings. Clumps of it in a mixed border would be sure to give satisfaction.—W. T.

THE GARDEN IN THE HOUSE.

CULTURE OF PLANTS IN ROOMS.

(Continued from p. 174.)

TREATMENT OF THE YOUNG PLANTS.

As soon as the seeds are perceived to have germinated, a quite different mode of treatment must be employed. The young plants must be very sparingly and carefully watered. They must also be placed in a position close to the window, in order to receive the full benefit of the sunshine, from which, however, they should be shaded from 10 a.m. to 4 p.m. with some light material. A piece of paper supported by sticks some inches higher than the plants will be quite sufficient if there is no blind or curtain to the window. The more light and air the young plants receive, the stronger and more vigorous will be their growth. An immoderately long development of the stalk is the direct consequence of want of sufficient light and air. If this sickly development be not checked in time, the stem of the plant falls down and rots on the surface of the soil. This rotting of the stem is the most fatal disease of young plants, and often sweeps off entire sowings. It occurs most frequently in that stage of growth when the supply of nutriment in the seed has been consumed, and the young plant has to depend on the food which it receives through the roots. If the fibres of these are not perfectly developed, or if any condition necessary to their normal action be wanting, the roots perish, and the plant falls to the earth and rots. Want of light and air, too much moisture, too much heat, and a sour state of the soil, are among the most frequent causes of this rotting of the stem. This evil is so fatal to young plants that we shall devote some space to a more detailed account of its causes and remedies. We have seen that one of the causes is want of light and air. This may be produced not only by placing the plants too far from the window, but also by having them too thickly sown in the pot; and even when other conditions are favourable, these causes will be sufficient to produce the wholesale destruction of the young plants. Excess of moisture is chiefly caused by defective drainage in the pots or by too moist air. In room-culture moist air is chiefly to be apprehended when the glass coverings, &c., are not regularly removed in order to admit fresher and drier air. Too great heat is very injurious to annuals in particular, when sown in a warm room. The windows, therefore, should be occasionally opened to admit fresh, cool air, or the plants should be placed near a cool entry. Sour and unsuitable soil will of course be far more injurious to young plants than to old ones, which have greater powers of resisting such hurtful influences, under which the tender fibres of the young plants succumb, and the death of the plants follows. The selection of the soil depends, as has been already said, on the species of plant which is to be sown in it. But, as a general rule, highly manured soil should be avoided, as this is apt to induce the rotting of the stems. A good loamy soil, or a free sandy peat-soil is in general the most suitable kind for all sorts of seeds. The rotting of the stem may best be prevented by avoiding the causes which are favourable to it, but where it has once commenced, the safety of the plants depends very much on the quality of the stems, with regard to their property of throwing out fresh roots. If the plants stand too thickly together, some of them must be removed so as to leave free space for the rest. The plants removed should be carefully transplanted into a fresh pot, and if their roots appear long and spindly, and deficient in fibres, the ends should be pinched off. This will excite the production of fresh fibres. The plants are inserted into holes made in the soil with a piece of wood or the finger, to such a depth that the seed-leaves may be just above the surface. The object of this is that, when the roots of the plants are affected, fresh roots may be produced from the sound part of the stem under the root-leaves. But even when the plant is healthy in other respects, it is advisable to treat it in the same way, as these additional roots will secure for it a stronger and more vigorous growth. If the soil into which the plants are transplanted be moist, it should only be well watered from above when it begins to get dry. One plentiful watering after transplanting is necessary, in order to settle the soil evenly around the plant; but in the case of

small plants this should be done carefully, so that their root-leaves may not be covered with washed-up soil. With healthy seedlings, no further attention is necessary, after transplanting; but those which are suffering from stem-rot, and whose further growth absolutely depends on the formation of fresh roots from the stem, should be placed near the window and shaded from strong sunshine. Moreover, water should not be given until the dry condition of the soil shews that it is necessary, and the leaves only should be moistened with the "refresher" in hot sunny weather. Rare and valuable seedlings should, also, in the earlier stages, be covered with a bell-glass, which however, should be removed as soon as they have made some growth. This will serve to keep the soil moist by checking evaporation.

Where stem-rot is the result of too much moisture, the pot should be taken out of the saucer and the drainage-hole examined, to see whether it has become choked up. If the plants are covered with a bell-glass, it should either be taken off or plenty of air should be admitted by raising one side of the bell-glass on a wooden prop. In cases where a flat sheet of glass is employed to cover the pot, it should be raised in the same manner. If the plants have grown up spindly and drawn, but yet do not stand too thickly together, sand or powdered charcoal should be sprinkled on them, so that the stems may be buried up to the root leaves. Seedlings which have got the stem-rot, from being kept in too warm a position, may be treated in the same manner. The sand surrounding the stems will keep them cool. If the pot should be already so full of soil that this plan cannot be adopted, or when unsuitable soil is the cause of stem-rot, the plants should be transplanted into fresh and proper soil. Gilliflowers are especially subject to stem-rot when they have been sown in too light soil. A stiff loam is therefore the most suitable for these. The best time for transplanting seedlings in general (unless stem-rot or too thick a sowing renders it necessary at an earlier period), is when they have formed one leaf in addition to the seed leaves. They may be transplanted either separately into small pots, or several together in pans. Strong seedlings of some kinds of plants may have the soil mixed with manure. These plants are noted in the enumeration. After transplanting, the seedlings should be treated according to the special directions given with each kind in the enumeration. Only with respect to the first few days after transplanting, no further attention is necessary in the case of seedlings which have been so carefully removed that the ball has been unbroken, and which have had only the ends of their longest roots pinched off. But plants which have suffered in the removal must be treated for the first few days afterwards in the same way as if they had been transplanted on account of stem-rot. Seedlings raised in boxes are to be treated after the same rules. Kinds grown in heated boxes, which show symptoms of stem-rot, should be placed in the window, but palms and other plants which require a high temperature should be kept in the heated boxes until they have grown strong enough to be removed into the terrarium. —*Dr. Regel.*

(To be continued.)

NOTES AND QUESTIONS ON THE GARDEN IN THE HOUSE.

Lycopodium dendroideum.—In New York, we are informed by Mr. Davidson that two thousand barrels of the tree *Lycopodium* (*L. dendroideum*) are used every year for bouquet making and forming wreaths. It is now principally brought from Maine, having become scarce in Connecticut and New York State.

Dracæna heliconifolia.—I find this fine species thrives well in my sitting room, a plant having been growing well in it for the past eighteen months. The leaves are fine in form, and of a pleasing green when kept free from dust by occasional sponging.—*G. W. K.*

The New Holland Pitcher Plant in rooms.—Mr. Ambrose Balfe grows this most interesting plant perfectly in his house in Westland Row. A specimen two years in the house is now in perfect health. It is covered with a bell-glass, and placed on a table near a window. We hope Mr. Balfe will some day tell us how he succeeds in growing so interesting and difficult a subject in a dwelling house.

Ivy as a Window Plant.—Londoners who cannot preserve their window pets, in place of striving to keep Geraniums, Fuchsias, &c., in life, should be contented with plants of Ivy grown in pots as pyramids, or other desirable forms, or suspended in baskets. It will thrive in any close room or alley; and if neat curtains or blinds contrast with the deep green of the Ivy, the effect is extremely pleasing. I noticed this particularly in house windows in Balcony.

DRYING WILD FLOWERS.

I AM anxious to make a collection of dried wild flowers. Will some one conversant in such matters kindly give some information as to the best mode of preserving them?—*M. L. W.* The following instructions, which are slightly modified from the remarks of the eminent botanist and collector Dr. Asa Gray on the subject, will, we have no doubt, supply all the information required:—

For collecting specimens, the only things needful are a small round trowel (or a large knife, strong enough to be used for digging up bulbs, small root-stalks, &c., as well as for cutting woody branches), and a botanical box or vasculum to hold the specimens collected. These boxes are made of tin, and in shape resemble a sandwich case, the lid opening for nearly the whole length on one side. They are made in various sizes; the most convenient and generally useful perhaps is one about fifteen inches in length by six inches across. A strong, well-japanned box of these dimensions will cost about half-a-crown.

The specimens collected should be either in flower or in fruit. In the case of herbaceous plants, the same specimen will often exhibit both at the same time, and both should be secured whenever it is possible. Of small herbs, especially annuals, the whole plant, root and all, should be taken. Of larger ones, branches will suffice, with some of the leaves near the root. Enough of the root should be retained to show whether the plant is an annual or a perennial. Thick roots, bulbs, tubers, or branches should be thinned with a knife, or cut into slices lengthwise.

For drying the specimens a good supply of soft and unsized paper—the more porous and bibulous the better—is wanted, together with some convenient means of applying pressure. All that is requisite to make good dried botanical specimens is to dry them as rapidly as possible between many layers or sheets of paper, to absorb their moisture, under as much pressure as can be given without crushing the more delicate parts. The best drying-paper is that which is made specially for the purpose, and which may be obtained from Mr. E. Newman, 9, Devonshire Street, Bishopsgate, London, E., but the softer sorts of cheap thick wrapping-paper will answer very well. The drying-pads are made by stitching from eight to a dozen sheets lightly together round the edges.

When the specimens are brought home after the day's collecting, each plant should be carefully laid out in a folded sheet of thin, smooth, unsized paper, the flowers and leaves being arranged in the position which they are to retain when dried. The folded sheet with its enclosed specimen is then to be placed between two of the drying-pads, and these again between two smoothly-planed boards of suitable size. Placing the whole on a table or on the floor, a weight of half-hundredweight or more is put on the upper board, and the specimens are so left until about the same hour next day, when the pads are to be removed and fresh well-dried ones put in their place, the boards and weights being also replaced as before. The pads which have been used are to be hung up to dry, so that they may take their turn at the next shifting. This process must be repeated daily until the specimens are no longer moist to the touch, which for most plants requires about a week; after which they may be transferred to the sheets of paper in which they are to be preserved. If very thick pads are used, it is not necessary to change them every day after the first two or three days. It is also to be observed that several pairs of pads, each with its enclosed specimen, may be placed between the same pair of boards, but in that case the weight applied to the upper board must be proportionately increased.

When the specimens are quite dry, they may be kept in folded sheets of neat and rather thick white paper; or they may be fastened on half-sheets of such paper, either by slips of gummed paper, or by glue applied to the specimens themselves. Each sheet should be appropriated to one species; two plants of different species should never be attached to the same sheet. The generic and specific name of the plant should be written in the lower right-hand corner, where the time of collection, the locality, the colour of the flowers, and any other information which the specimens themselves do not afford, should be also duly recorded. The sheets should be all of the same size. The herbarium of Linæus is on paper of the common foolscap size, about eleven inches long and seven wide; but this is too small for an herbarium of any magnitude. Sixteen inches and a half by ten and a half, or eleven and a half, is a more convenient size. The sheets containing the species of each genus should be placed in genus covers (made of a full sheet of thick coloured paper), which fold to the same dimensions as the species sheet, and the name of the genus is to be written on one of the lower corners. These should be arranged under the orders to which they belong, and the whole kept in closed cases or cabinets, either laid flat in compartments like large "pigeon-holes," or else placed in thick portfolios, arranged like folio volumes, and having the names of the orders lettered on the back.

THE ARBORETUM.

HARDY TREES AND SHRUBS.

BY GEORGE GORDON, A.L.S.

THE EDIBLE-FRUITED CHINESE THORN (CRATEGUS LAYI).

THIS fine thorn forms a robust, free-growing small tree, from twenty to five-and-twenty feet high, with stout but not very numerous divaricate branches, and long spineless shoots, which are quite glabrous when young. It is a native of the northern parts of China, is perfectly hardy, and one of the earliest in leafing and flowering, and when loaded in the autumn with its large brilliant red haws it makes a fine display, and deserves a place in every pleasure ground, however limited. The leaves are large, broadly-ovate, tapering much to the foot-stalk, more or less deeply divided into five lobes, and regularly serrated on the edges, and when fully matured of a bright glossy-green above, quite smooth on both surfaces, and with footstalks from one to two inches in length. The



C. Layi—full sized leaf.

lobes of the leaves nearest the base are oblong-pointed, while those towards the point are broad and but slightly divided, but all of them are acutely serrated on the margins. The stipules, when present, are small, half cordate, and coarsely toothed on the outer edge, but they are mostly absent. The flowers are rather large, white, and produced in terminal, downy, acute-bracted corymbs, in the end of April or beginning of May. The fruit is large, globular, bright red, and when ripe, in October and November, agreeably tasted. Mr. Tradescant Lay, the British consul at Foo-chow-foo, the capital of the Chinese province of Fokien, who first sent seeds of this thorn to the Horticultural Society in 1844, says that "it grows in the province of Shan-tung, and that the fruit, when ripe in November, is dipped in syrup, stnek on rockets of straw, and sold in the streets of Ningpo and other northern towns." In this country it is one of the handsomest of all ornamental Thornes, and on account of its somewhat ample foliage it is easily distinguished from all other sorts, even when seen at a considerable distance off.

NOTES AND QUESTIONS ON TREES AND SHRUBS.

Calycanthus occidentalis.—This fine shrubby plant has been flowering abundantly for these past two months, planted against a wall in the gardens at Kew, and is still in great beauty. The flowers are of a dark red colour, and measure nearly 2 inches across. As a wall plant, it is worthy of more attention than it usually receives.—W.

Indigofera floribunda.—A specimen of Indigofera now in bloom in Mr. Cooke's unique and charming garden at Glen Andred, Sussex, has been flowering for nearly four months, and usually continues to do so till November. It is trained against a wall, and, considering its blooming period, beauty of bloom, and graceful habit, is second to no other wall plant we have; indeed, it is the best flowering wall plant with which we are acquainted.

Shrubby Potentillas.—Two of the best dwarf shrubs in flower at the present time are two species of Potentilla, viz., *P. dahurica* and *fruticosa*. They are capital subjects for margins of shrubberies or for rockwork. The flowers are yellow, and are produced in great abundance. The latter species has been in bloom for these past two months, and is yet, in many places, a mass of blossom.

Alnus glutinosa laciniata.—Only those who have been fortunate enough to see a really fine plant of this tree can form a true idea of what a noble specimen it makes, when it finds itself in a locality "to its liking." There is an exceedingly grand plant of it in Mr. Gassiot's ground at Carshalton, growing within 10 feet of the Wandle, upon soil only about 18 inches above the surface of the stream; its lower branches overhang the water, and are just high enough to walk under on one side, while on the other side they feather to the ground. The expanse of the branches measured 36 feet in one direction, and in other directions nearly as much; and the height was found to be 47 feet.—W. T.

Weeping Birch.—What is the greatest size to which this graceful tree will grow? Books give 40 feet as its height, but I think this is often much exceeded. A few days since I measured one, growing a few yards from the bank of the river Wandle, and I found it to be 53 feet high, and to cover a space of ground 48 feet across one way, and 42 feet another way.—W. T. P. [We believe that the Weeping Birch will grow as high as the normal form. There is a fine specimen of it in Elwanger & Barry's great nursery at Rochester, in the State of New York, which, though not very many years introduced from Europe, was quite 40 feet high when we saw it in 1871.]

The Ash-leaved Box-Elder.—Few trees have so striking an appearance in plantations as the variegated form of this species, which variety is commonly known under the name of *Acer Negundo variegatum*. The very marked difference in the shape of the leaves of the Ash-leaved Box-Elder, when compared with the leaves of other Maples, surely entitles it to removal from the genus *Acer*, and to be better known than it is under the name of *Negundo fraxinifolium*. It is described in some books as a "short-lived tree," which may have tended somewhat to prevent its being so frequently planted as it deserves to be; for the colour of its foliage is of such an unusual apple green that it forms a most pleasing contrast to the foliage of other trees. Books and lists agree in stating its height to range between 20 and 40 feet. It may therefore be of interest if I call attention to an unusually large specimen of it, which stands by itself at the junction of three roads near the Culvers Mill, on the River Wandle, at Carshalton; this tree is 66 feet high, and its branches overhang a circle of about 60 feet in diameter.—W.

THE KITCHEN GARDEN.

THE LATE IMPERIAL KITCHEN GARDEN.

WITH the object of turning to some useful account the *Potagerie* at Versailles, which has been for some years in a state of neglect, M. Joigneaux has laid before the Bureau of the National Assembly the project of a law for converting it into a public school of practical horticulture. By the provisions of this law the kitchen garden at Versailles is to be transferred from the jurisdiction of the Minister of Public Works to that of the Minister of Agriculture and Commerce, under whom it will assume another character as a national school of horticulture. All the pupils of this school are to be extern, and will be admitted only after passing an examination in such branches of knowledge as are taught in the primary schools. A Government regulation will fix the other conditions of admission. The profits on the sales of the produce of the grounds will be secured to the State, being placed in the hands of the Minister of Agriculture and Commerce, and the Minister of Finance. A supplementary credit of 20,000 francs will be opened, to enable the school to commence on the 1st of September. The establishment of this school would be a great national benefit, and would be attended with the happiest results. The pupils, after their two years' instruction, would return to their native villages, carrying with them improved methods and ideas on the subject of gardening, which their friends and neighbours, after ocular demonstration of their value, would not be slow to adopt. The inevitable result would be a general advance in the standard of horticulture throughout the provinces, with its necessary consequences of increased and better produce, and an improvement in the condition of the small *propriétaires*. We wish M. Joigneaux every success, and trust that his patriotic motion will receive a warm welcome from, and be passed with acclamation by, the "collective wisdom" of the National Assembly.

ENGLISH *v.* AMERICAN POTATOES.

SEVERAL articles have appeared in English gardening periodicals on this subject, all viewing the question in an English light; perhaps a few notes, therefore, from an American point of view may not be uninteresting. When the dollar-per-pomd Potatoes were talked and written about, probably English speculators expected to "strike ile" by investing in some, and would naturally praise their new investment, in order to induce English gardeners to take up the novelty. Doubtless many were disappointed, but the same would occur if we depended on the English varieties in this country. My experience confirms the fact that no crop varies so much under different soils and climates as the Potato; but, as a rule, on warm open soils the quality is superior to that of those grown on cold stiff land, and there is also greater freedom from disease. A case in point is the kitchen garden at Chatsworth, Potatoes grown in which were poor in quality, the soil being low and cold, but when grown on hot-beds under glass, the quality was so good that I was requested to send all I had for the family table in London. The garden at Teddesley Park had a light warm soil naturally drained, and the Potatoes grown in it were invariably fine and excellent in quality. What, however, an Englishman would consider to be a first-rate Potato is not to be obtained in this country, although those grown on the light sandy soil of New Jersey are much above the average. We can, however, grow first-rate Sweet Potatoes, a luxury not to be obtained in the cold damp climate of England. I obtained a few tubers from England of a number of the most popular varieties of Potatoes, including several of Patterson's Seedlings, Red Flour-ball, Racehorse, and Rivers' Ash-leaved Kidney, but from the first it was evident that they were not a success; the growth was weak and poor, and, when taken up, the tubers were small in size and number. When cooked, the Ash-leaved were better than any other Potato I have tasted here, and I intend trying them again, for we have no very early variety here, and the Ash-leaved is at least a fortnight earlier than Early Rose; the other varieties were an indifferent crop, and not good when cooked, the Flour-ball being the best, and Racehorse the worst. I gave them two years' trial. We find the Early Rose good in quality here, but from stiff land it is very bad, which accounts for the various opinions expressed by correspondents respecting it, and I have found other varieties just the same. I may say, however, that the Early Rose was a great acquisition for this country, but I never expected it to supersede, or even compete with, the many first-rate varieties already grown in England.

JAMES TAPLIN.

South Amboy, N.J., U.S.A.

Potato Disease.—When the crop is gathered, the apparently sound and good are selected from the diseased, either for immediate disposal or for storing by clamps or otherwise, but a portion of the latter in its early stage will invariably escape detection and be mixed with the sound, to their ultimate, if not speedy, ruin. Dry lime, pulverized, should be thinly sprinkled over every layer of the clamp, and the Potatoes—say in the spring, or when required for use or sale—remain invariably in the same state as when stored, the lime acting as a preventive of infection by contact. I should say a bushel to six pecks of lime would be amply sufficient for a clamp the produce of an acre and a moderate crop. This plan, which is by no means new, I have adopted both in Kent and Essex with unflinching success.—*R.*, in *The Times*.

Potato Starch.—It has been suggested to me by Mr. Gladstone that, now that we are on the eve of a Potato famine, I should give the widest publicity to the very simple method successfully introduced by the late Rev. Professor Henslow into certain villages in Suffolk and elsewhere for utilizing the diseased tubers. This method depends on the fact that the starch of the Potato is not affected by the disease, but retains its nutritive properties, and consists in rasping the peeled tubers upon a bread-grater into a tub of cold water. In a few minutes the starch will be found to have sunk to the bottom, and the diseased matter, woody fibre, &c., will be suspended in the water, and should be poured away with it. Fresh water should then be added, the starch stirred up, and again allowed to settle. Two or three of such washings will remove all impurities, and render the starch fit for use. If thoroughly dried it will keep for any time, and can be used as arrow-root, for puddings and cakes, or, mixed with flour, as bread. A flat piece of tin, prepared as a grater, may be had of a tinsmith for a trifle, and nothing else is required but a knife and a tub of water. But this temporary measure cannot be all that scientific resources may supply. Surely some method (by desiccation or otherwise) is applicable and available to the cottager, by which the sound tubers and the sound parts of diseased tubers may be so treated that they may be preserved for winter use; and I cannot doubt but that chemists will suggest such. Lastly, this season, which has favoured

the Potato disease, has also favoured an abundant crop of green food; and I would urge upon the clergy, medical men, and intelligent classes of the country parishes, combined action, in the way of precept and example, in introducing the Beetroot, the foliage of the Turnip, and various other vegetables as an article of daily consumption. Now, too, is the time for laying in stores of such nutritious articles as dried Haricots, Calavances, and various other Pulses and Beans which form the cheap, agreeable, and most nutritious food of the populations of many tropical countries.—J. D. HOOKER, in *The Times*.

American Rose Potato and the Disease.—Passing through a metropolitan nursery the other day, I saw a fine crop of this Potato that had just been taken up. The tubers were of good size and well formed, and out of a crop of fifty bushels, I was informed that a peck of diseased ones had not been found, whereas such kinds as the Shaws and Sandringham were very much diseased, and I do not expect that more than half a crop would be got of them. Perhaps some of your correspondents will kindly let us know if this Potato has thus escaped the disease elsewhere.—T. S.

GARDEN DESTROYERS.

TENTHREDO ADUMBRATA.

THE Pear trees in the neighbourhood of Dublin have been suffering severely from the attacks of a viscid larva, black, like a little leech, which seems glued and immovable on their leaves, and which eats the parenchyma from one of the sides, usually the



Slug Worms destroying Pear Leaf.

upper side, beginning not at the edge, but in the middle, and leaving the anastomoses of the smallest nerves and the epidermis of the underside intact, so that the leaves which it has attacked resemble a piece of very fine lace. It has a form and appearance which induced Réaumur to give it the name of *ver-limace*, slug-grub, or slug-worm. When at the end of the autumn it has acquired its full size, it has a slight resemblance, with its head drawn under the first ring and its tapering extremity, to a small tadpole. It is provided with twenty feet, but it is necessary to detach it from the leaf in order to see them. After having changed its skin four times the black gluey slimy surface disappears, and it becomes of a yellow orange colour; it descends the tree and makes for itself a cocoon with grains of earth joined by some threads of silk. It appears, however, to be difficult to rear the pupa into the perfect insect, for Boisduval says that he has put hundreds into pots filled with earth which he left out of doors during the whole winter, and yet never succeeded in obtaining a single perfect insect from them. Others, however, have succeeded, and it has been ascertained that it turns into a sawfly, named *Tenthredo adumbrata*, which is two lines and a quarter long, of a shining black colour, with the antennæ almost as long as the abdomen

The feet are black, with the anterior knees and legs of a red brown. The wings are dark.

The larva shows itself on the Pear trees at the time when the fruit is half or two-thirds of its proper size. The havoc which it commits on the leaves by destroying the parenchyma of course prevents the proper elaboration of the sap, the vegetation stops, the Pears cease to increase in size, and soon fall. There are several caterpillars of sawflies which resemble this species, and produce different kinds of sawflies, but they do not all undergo their metamorphosis in the same way. The *Tenthredo cerasi* of Linnaeus, for example, which has been confounded with this species, does not undergo its metamorphosis in the earth, but make a little cocoon between the leaves of the Cherry tree.

Similar slug worms occur in America, probably of different species from those in Britain. One in especial is mentioned by the American entomologist, William Peck, as having been for a long time a great plague in the United States, where it multiplied in a prodigious manner, on the Cherry, Pear, Plum, and Quince trees. There were upon every leaf from twenty to thirty larvæ. Many trees perished from exhaustion, those which resisted remained languishing, developed their shoots at the wrong season, and were struck with sterility. The advice given in America, when these insects are abundant on the fruit trees, is to sprinkle a little quicklime on the leaves. A. M.

A Plea for the Birds.—The bird question comes up as regularly as the "gigantic Mushroom" and the "large Gooseberry" (by the way I miss the Gooseberry this year; probably the late spring frosts nipped our old friend in the bud), but I should not notice it only that frequently there is a slight hint that our American cousins have not displayed their usual "cuteness" in introducing the sparrow into this country, and that at some future time they will repent, &c. This I doubt; at any rate it will not be in the present generation, and, when the trouble comes, I have no doubt there will be a remedy invented, at least greater difficulties have been surmounted. I know the annoyance from birds is very great in England, but is it not caused in a great measure by the almost total destruction of every bird or animal which preys on small birds, as mark the reports in the *Field*. I seldom take up a number of that journal without seeing one or more notes of how so-and-so shot such and such a rare hawk or owl, or the number his keeper trapped, and so on. This being done all through the country, the small birds are left masters of the situation, but even then they are not an unmixed evil, and they are no doubt a positive blessing in this country. A stranger need go no further than the avenues in New York and Brooklyn to see that.—JAMES TAPLIN, *South Amboy, New Jersey, U. S.*

Thrips and Red Spider.—I know of nothing which would be a greater boon to gardeners than a safe, easy, and certain recipe for killing thrips and red spider. I believe there is nothing equal to good tobacco paper for the first, but the difficulty is to get it good. I had some from a respectable source a short time back, sheets of strong brown paper, carefully folded and the outsides as black as pitch, but when unfolded to put into the bellows, it was very little better than plain brown paper, it would not even kill aphides, and of course would scarcely affect the thrips at all. I suppose it is not possible to obtain the juice at any price, else we might make it as strong as we liked, for I am persuaded, after fifty-six years' practice, that there is nothing like smoke for such insects as can be killed with it, as it is easily applied, while the various washes and powders are useless, because of the difficulty or impossibility of applying them. The point is to commence soon enough, for once let the insects get ahead, and then good-bye to handsome plants.—SENEC.

GARDENING ROUND LONDON.

(DURING THE PRESENT WEEK.)

BY OUR SPECIAL REPORTER.

The Flower Garden.—This is a good time for visiting the gardens of our neighbours, in order to see what is most effective among bedding plants, which are now at their best. Such visits may afford a hint as to how we might improve our own next year. Arrangements both of plants and beds should be noted, as well as instances in which there is unusually good harmony of colour. In Battersea Park the variegated Maize forms a splendid front to some of the taller growing Cannas, which are further bordered with Geraniums and Heliotropes; Musa Ensete, singly on the turf, is a lovely and attractive object; Fuchsias, both tall and dwarf, seem quite at home, and we also noticed nice examples of New Zealand Flax and India-rubber plants, as well as of Palms of many kinds. The "cosy nooks" under the trees are tastefully filled with tree Ferns, tall broad-leaved Coccotholobas, India-rubber plants, *Monstera deliciosa*, &c.,

and under their shade are planted here and there the Bird's Nest and other ferns, the whole growing on a carpet of the common greenhouse Selaginella (*S. Kraussiana*). The rock-gardens also present some admirable features, for here one may see what would suit his taste best for forming a hardy "carpet," also several of the best and most attractive plants to mix together, either in small masses or as isolated specimens. Other good examples of flower gardening may be seen in Victoria, Hyde, and Regent's Parks, the gardens of the Zoological Society, and in many of the private gardens round London. One of the most neatly and tastefully arranged is that in front of the conservatories at Sion House.

Conservatories.—Of the gayer blooming greenhouse climbers *Lapagerias* at present are among the finest; they love open material in the way of soil, and plenty of water when growing and flowering. Passion-flowers, Cobaeas, and other quick-growing climbers are kept within bounds by a free use of the knife, and clean by means of good syringings in the evening, using occasionally a little weak manure water. Asters in pots are at present very gay, as are also zonal *Pelargoniums*, which, in order to prolong their flowering season, have all seed-pods picked off as they appear. Among flowering plants foliage ones are often mixed, and with excellent effect. The dark-leaved *Coleuses* and *Iresines*, and the white *Centaureas* and *Cinerarias*, form as pleasing contrasts indoors as they do out. Indoors they can be made even more available, for along with them we can group Citrons and other evergreen shrubs, Lilies of various sorts, Fuchsias, Balsams, *Vallotas*, choice annuals, and an innumerable host of other variegated-leaved and handsomely-flowered plants. *Begonias* are now found to be very useful, especially the herbaceous kinds. *Heaths*, *Cytisus*, *Coronillas*, and other hardwooded plants are still kept out of doors on beds of ashes. Cacti, Aloes, *Fouquierias*, &c., are likewise out, or if not, they are exposed to the sun as much as possible, so as to make them a little hardier than they might otherwise be for the winter. Even a little browning by the sun is not objected to.

Stoves.—In these both temperature and atmospheric moisture are being gradually lessened, the main object now being to have the plants well matured before the short days arrive. But little shading is now requisite. Plants, however, having fleshy roots, such as *Musas*, *Palms*, &c., are still allowed a tolerably large amount of water; not even in the depth of winter are they allowed to become quite dry. Several of the *Begonias* that were cut over some weeks since are pushing up afresh nicely, and will be found most useful in another month. Of these, none is better than *B. spatulata*, for it is not only a free bloomer but its large pure white flowers make it also desirable. *Allamandas* growing vigorously receive good supplies of manure water at the root; there is little fear of too much luxuriance, as at this season every forthcoming eye shows a good truss of bloom, which, unless well nourished, will not open large and fine. *Adiantum Farleyense* is kept shaded with pieces of paper or canvas in addition to the ordinary shade of the stove or fernery. Filmy Ferns are also well shaded and gently sprinkled overhead every day, and even twice on particularly warm days. Should the weather be showery, it may be injurious to sprinkle them unless they are getting dry.

Indoor Fruit Department.—Pines from which fruit has been cut, but the suckers of which are hardly fit to take off, are either left a little while longer in the pit in which they fruited, or are taken out and placed in a vinery or some other warm house, where they will be sure to produce good suckers. As soon as the necessary supply of suckers is obtained, they will be taken off and potted; little water, however, is given to the suckers until they begin to emit fresh roots. Plants that have flowered have a few pieces of good fibrous loam placed around their necks, so as to induce a free emission of young healthy roots, which can be fed by occasional waterings with weak manure. Young pot vines intended for next year's fruiting are being ripened by leaving a little air on night and day. Peach and Nectarine trees continue to be well syringed. Those that can be placed out of doors are put out, care being taken to obviate sudden changes at the root. Fig trees on which fruit is swelling receive thorough waterings, which are gradually reduced as the fruit begins to ripen. Strawberries for forcing are being shifted into larger pots.

Hardy Fruit and Kitchen Garden Department.—Sowings of the American Red Stone and Strap-leaved Turnips are being made, as they stand a little later in the ground than the White Stone or Yellow Finland kinds that were sown a fortnight ago and are now being thinned. Early Potatoes are being harvested; the largest are separated from the others for culinary purposes, the second sized ones are kept for seed, and the smallest are given to the pigs. Potatoes are well dried in the sun before storing. The main winter crop of Spinach is being sown, and the first sowing is being thinned out a little. Early Celery is being earthed up as required, but late

crops, which generally get only one earthing, are kept untouched. Lime is dusted over the plants, to prevent the ravages of slugs. Any suckers springing from the plants are removed. Hardy Hammersmith and Brown Cos Lettuces are being sown on sheltered ridges to remain throughout the winter; they come in useful after the late crop is finished, and before the early Lettuces come in. A second sowing of Winter Onions is made in case of any mishap befalling the other. Endive is sown on sheltered ridges; such plants as are fit are planted out, and those that are ready are blanched. For blanching some prefer just to place a piece of matting over the crowns, as it does not break or crush them. Leeks in ridges are being earthed up, mixing at the same time some thoroughly decayed manure with the soil. Seedling Parsley is being thinned, and some crowns transplanted where they can be protected during winter. Netting is stretched over such Pear trees on walls as have fruit on them, to prevent damage being done to it by wasps or birds. All runners are removed from young Strawberry plantations as they appear.

NURSERIES.

Indoor Department.—Glass houses are being repaired, so as to have them in trustworthy condition throughout the winter. Heating apparatuses are also undergoing thorough examination. Dipladenias are being increased by means of layers. One or more plants are placed in a shady part of the stove; the several shoots are loosened from the trellises; little pots are then filled with a peaty compost and finished with a layer of silver sand on the surface; these pots are then so placed that the joints of the shoots may be placed on them and held in position by means of a stone or peg. Under one shoot may be placed several pots, keeping one or two eyes clear between each pot. Epiphyllums are being grafted on Pereskia stocks, on which they seem to take freely, and do not require nearly so much attention, heat or shade, as many other plants. Camellias and Daphnes are also being grafted in close propagating frames in intermediate houses. Conifers are being propagated by means of cuttings of the young wood; on some, however, a small piece of the old wood is retained. These are placed in close frames or under hand-lights in cold frames, and are well shaded. Gloxinias struck from leaves are being potted off singly as they become fit. Old plants are gradually dried off, as are also Achimenes which have done flowering. The ordinary stock of hardwooded greenhouse plants is still kept out of doors.

Outdoor Department.—The training of young fruit trees is still being actively proceeded with. Budding is not everywhere yet finished. There is still a good flow of sap in the branches, and the bark opens freely, but in most cases branch budding was done first, leaving for the last such plants as were intended to be worked on or near the base, where the bark continues longer in a suitable condition than on the branches. Evergreen shrubs are being lifted for purposes of sale, and also for making room for other things. Most people, indeed, contend that this is the best of all seasons for transplanting evergreens. The ground is naturally warmer and moister at this time of year than at any other, and therefore, as soon as the roots are consigned to their new quarters, they begin to grow, consequently the plants get well established before winter, and are in a good position to break away vigorously next year. Cuttings of herbaceous plants, lately struck in pans in frames, are being potted off singly into thumb-pots, placed in cold frames, and kept well shaded for a time. Seed of all kinds is now being secured. What is ripe is gathered, and what is not is being placed under the most favourable circumstances for its maturation. Balsams are found to yield seed from the most double kinds as well out of doors as in pots, and in order to induce them to ripen seed with more certainty, the side-shoots are removed, leaving only the main or central stem. Lilies of the lance-leaved section are being looked over. The ground occupied by summer annuals is now mostly free from them, and is being manured and dug for biennials and perennials raised from seed this summer, to be transplanted therein. Many of the biennials have only just come up; but strong-growing ones, like Hollyhocks, Digitalis, &c., which were sown earlier, are now transplanted into good rich ground, there to remain until there is room for moving them to their permanent or blooming quarters.

MARKET GARDENS.

In these fruit gathering now occupies attention. Vegetable Marrow plantations are still yielding enormously, and the plants are growing rapidly. Stones or half bricks are laid on the rambling vines to cause them to root at their joints, the withered leaves are removed, and in some of the earliest plantations it has been found necessary also to remove some of the shoots. Custard Marrows are also bearing freely. French and Runner Beans are both yielding heavy crops; the former are past their best, but the latter are still in excellent condition. Gherkins, though past their best, are still producing a few. Lettuces that were planted between lines of Savoys

are being cleared off, the Savoys now requiring all the space. Celery is growing apace, and has not from the first received a check from the want of water. To the earlier crops a little earth is added each time they are hoed; a main earthing has just been applied to the first planted. Lettuces on the ridges between the earlier crops are being removed for market. Endive is being planted out in sheltered places a foot or fifteen inches asunder, in lines two feet apart, the top of the late Celery ridges being mostly occupied with this crop. Between the rows Strawberry plants are planted; the Endive, however, will be removed before the Strawberries require the space. Any plants of Carrots, Parsnips, or Beet, running to seed, are immediately removed from amongst the rest, and are either thrown away, or, if not too far gone, the sprouting shoot is removed, and the roots brought to market. Herbs are being cut and dried. Red Cabbages are good this year, and where the greatest distances have been left between them, they are by far the largest. Cabbage plants set aside for seeding are now cut down as the seeds become ripe. Tomatoes are kept well tied to stakes, keeping them on the sunny side of the support, and pinching off any laterals that may happen to appear. Some of the most favoured, in regard to position, have ripened a few fruits, but fruit-bearing is not yet general. There is, however, promise of a heavy crop of good fruit, should we have good sunny weather to ripen it. A nice supply of Spinach is now being obtained from sowings made some weeks since. Late sowings have just come up, and are being thinned and cleaned by means of short-handled narrow hoes. The trampling to which they are subjected in the operation does not seem to harm them much, for in a day or two they appear as fresh as ever. Cabbage plants sown in 4 feet or 5 feet beds, are now forming their fourth or sixth leaves, and are being cleaned in the same manner. The hoes used for this sort of work are about an inch and a half in width, and are very useful for loosening the soil as well as thinning the plants. Beds of Cauliflower plants are being sown in warm sheltered places, where they will remain until hard frosts are likely to come on, when they will be lifted and placed under hand-lights or in frames. Some, however, prefer leaving them exposed a little longer, as they think they stand the winter better by being hardened a little.

LAW NOTES.

Injuring Flowers and Shrubs.—At the Marylebone police court the other day, Charles Davis, seventeen years old, was charged with wilfully damaging flowers and shrubs in Regent's Park. James Scarfe, a park-constable, saw the prisoner stamp on a bed of valuable plants, and after walking over some other flowers, throw himself at length on some laurels and break several shrubs. Mr. Mansfield ordered him to pay a fine of twenty shillings or go to prison for fourteen days.

Marland v. The Lancashire and Yorkshire Railway Company.—This was an action against the company for the non-delivery within a reasonable time of eight bags of onion seed intrusted to them for carriage from Bury to Liverpool, by reason of which the plaintiff had lost his market and suffered damage. The defendants had paid £5 into court as sufficient to cover the loss, but the plaintiff claimed £156. He was, however, subjected to a very damaging cross-examination both with regard to the value of this seed and other matters, and the jury stopped the case, and gave a verdict for the company.

A Right of Common Case.—Mr. Justice Mellor was engaged the other day at the Dorset Assizes in hearing a right of common case. The nominal litigants were Davis v. Thorne, but the dispute was in reality between the Earl of Shaftesbury, Lord Normantou, Lady Bingham, and other freeholders, on the one hand, and Mr. Fryer, lord of the manor of Verwood, in Dorset, on the other hand. The right of common and the right of turbary were involved in the case. The common in question consists of 1,500 acres. The plaintiff Davis was a tenant of Lord Normantou, and before certain enclosures were made—now the subject of litigation—he could drive his cattle at once from his homestead on to the common. But by these enclosures—made by the defendant—he had been shut out, being compelled to go on to the turnpike road in order to get to a portion of his farm, thus putting him to very great inconvenience. A great number of witnesses came forward, it being argued from the evidence that by the making of the enclosures the lord of the manor had enriched himself, while the rights of the freeholders had been destroyed. The case ended in a verdict for the plaintiff, nominal damages forty shillings. This will prevent the formation of any more enclosures on the common by the two hundred tenants at present living there.

What is an Inch of Rain?—An English acre, says the *Builder*, consists of 6,272,640 square inches; and an inch deep of rain on an acre yields 6,272,640 cubic inches of water, which, at 277,274 cubic inches to the gallon, makes 22,622.5 gallons; and as a gallon of distilled water weighs 10 lbs., the rainfall on an acre is 226,225 lbs. avoirdupois. As 2,240 lbs. are a ton, an inch deep of rain weighs 100,933 tons, or nearly 101 tons per acre. For every 100th of an inch a ton of water falls per acre.

THE GARDEN.

“This is an art

Which does mend nature : change it rather : but
THE ART ITSELF IS NATURE.”—*Shakespeare.*

THE SIX OF SPADES.

CHAPTER XX.

Mr. Chiswick on Bedding-out (concluded).

“You know, my friends,” Mr. Chiswick resumed, after one of those pauses which were made in our readings, not only for the refreshment of the reader himself, but that the other members of our small society might converse upon the subject of his lecture, “you know that I have a brother, who is a huntsman; and, as I hear from those who have seen him in the field, and as I read in the *Field* itself, a very good huntsman too. Well, we had the other day a grand debate, which of us had the most difficult place to fill. ‘To deserve the name of a huntsman,’ says brother Will, ‘you must have a brave heart in a strong body, and a clear head in your velvet cap. You must know the natural history, character, habits, and capabilities of the three most intelligent animals in all creation (not excepting a large number of human beings, such as drunkards, gamblers, and vulpicides), the horse, the hound, and the fox. You must know every wood, plantation, spinney, and gorse covert, every field and fence, every “earth” and drain in the hunt. You must be such an accomplished horseman, you must have such nerve, and hauds, and seat, that you can either make your horse do his hest at full gallop over a big’un or a brook, or cau make him creep step by step down, through, or up that “very nasty place indeed,” in which there is only just room for him and for you. All the while you must be able to think on horseback, to observe the line of your fox, to watch the working of your hounds, and to restrain your “field;” to be calm when your fox, just breaking into the sweetest country you have—all grass, and the next covert five good miles away—is headed back by a young lunatic, racing outside for a start, and makes for the woodland clays; to be serene when some fiend, in the form of a sheep-dog, chases him, and the scent is lost; to keep your temper when that chiropodist, on the rushing chestnut screw, rolls over the best hound in your pack.’

“To be a good gardener,” I made response, “a man must be well acquainted with geology, entomology, and meteorology (expecting that these long scientific words would make a strong impression upon William’s mind, I must confess to some disappointment upon hearing a low whistle), with botany, chemistry, geometry, drawing, and colour. He should have Solomon’s knowledge of all trees, from the Cedar to the Hyssop. He should know not only from what countries his trees, shrubs, flowers, fruits, and vegetables—all things under his care, whether pleasant to the eye or good for food—are brought, but the climate, soil, and situation in which they naturally thrive. He must have both a refined taste and a persevering industry, both mental and manual skill. He should be as strong in health as the hardy Norseman, for that is a perilous life which takes men in the winter-tide from the 75° of the stove to the 20° of the outer air. And with all these qualifications he must submit sometimes to be regarded as a mere brewer of wood (of tallies and pea-sticks) and drawer of water, for his plants. He must be conscious that he is occasionally considered by his fellow creatures (alas! it may be by those whom he serves), only as a useful attendant on the cook. He must be prepared, again, to hold himself responsible for all the inclemencies of the weather, and the injuries done thereby. Like the great patriarch, he must bear the loss, whether drought or frost consume. He must listen at times to strong hints and suspicions that he has layed, incubated, and hatched all the red spiders, mealy bugs, thrip, scale, beetles, aphids, slugs, snails, grubs, and caterpillars, which gnaw the gardener’s heart.”

Our single wicket match ended in “a draw.” We came to no agreement on the main question. On one point, nevertheless,

we were quite unanimous, namely, that a large number of individuals set up to be huntsmen and gardeners, because they possess one or two of the many qualifications required. “I know a fellow,” said Will, “who considers himself quite A 1 as a huntsman, because he has won two or three steeplechases, and can ride eight stone ‘with notice.’ When there are spectators, he is looking for a big fence, instead of looking at his hounds, and his main object in life appears to be to ‘pound the field.’ Half the determination to kill his fox which he exhibits in his efforts to kill himself, would make him a great reputation. Another thinks himself qualified to carry a horn because his father and his uncle hunted hounds; and a third feels himself quite equal to take command of ‘the Quorn,’ because he has been for four seasons one of the most incompetent whips in England.* There are plenty of them, who can do one thing well; who can do well, or at all events look well, in the saddle, who can buy horses, corn, and meal, breed hounds and bring them out in first-rate condition; but a huntsman! why, I tell you, Frank, you would have to chuck fifty such chaps as these into a furnace, before you could get enough of the real metal to make one Will Goodall!”

“It is very much the same,” I rejoined, “with gardeners. A youth has hardly been foreman for a year before he esteems himself competent to preside at Chatsworth. He thinks himself a grape grower, because he has thinned a few large bunches of grapes; a plantsman, because he has produced a huge *Caladium* or *Coleus*; a master in arboriculture, because there happens to be a nice *Wellingtonia*, planted when he was a baby, in the grounds of the place in which he lives. Nay, not a few of our older gardeners quietly ignore, or openly depreciate, important branches of their art. ‘We don’t go in for fruit, we are not great here in kitchen stuff, our soil is too light for this, or too heavy for that,’ they say.

“Now it’s all very well for a gardener to have a speciality, to try for excellence and perfection in some one department (and I would advise him to do so where his range is limited), always stipulating that nothing of consequence shall be neglected; but never, so long as I am in the flesh, and one blackball excludes, shall that man be admitted into the ‘Six of Spades,’ who contracts and confines his admiration to some particular pursuit in horticulture, and sees no charm beyond; who, excelling in fruits, takes no notice of flowers, or succeeding in stove and greenhouse plants, will hardly look at the outdoor garden, the rosery, the fernery, the alpine or herbaceous plants. The true gardener loves them all, and wherever or whenever he finds either beauty or cultural skill, there and then his heart is glad. But I fear that there are many who declare themselves to be passionately fond of a garden who only care for a little bit of it; and I have seen those who were ‘never tired of gazing on the darling flowers,’ signally defeated in single combat with an honest, humbug-hating yawn. I could tell you of a pretender who came from one of the principal places of England to see another yet more beautiful than his own, and when he found that there were no Orchids, he passed through the spring gardens as quickly as though he was late with a letter of importance for the post, and then spent the rest of his day in an adjoining public-house. You say, Will, that many a man blows the huntsman’s horn who knows but little of his craft, and I say that many a man plays *Flora’s fiddle* who is master of but one tune.”

This conversation came into my thoughts when I began to consider what I should say to you of Summer Bedding-Out; and you will accept it, I hope, as an illustration of a fact, which all true gardeners must acknowledge and deplore, namely, that while this branch of modern horticulture absorbs with many of our brotherhood an undue proportion of their time and thought, by many others it is not justly appreciated, and by some is absolutely denounced. I have spoken of the first of these extremes; let me say now, referring to the latter, that the man who can look upon beds, well arranged, of these summer beauties, bright with a soft splendour when the evening sun is low, and feel no admiration nor enjoyment,

* “I’ve a very unpleasant duty to perform this morning,” said a noble and sarcastic master of hounds to his friend, as they rode to the meet. “I’ve an apology to make to my two whips. I told them the other day that they were the two biggest fools in England, and I’ve been out since with Lord —’s hounds, and seen two bigger!”

does not realize my idea of a florist. What, think you, would our gardening grandfathers say if they could return to gaze on those glowing groups of Stella and Cybister, Lady Constance Grosvenor, and fifty other scarlet, carmine, and crimson Pelargoniums; the roseate blushes of Christine, Rendatler, Amaranth, Miss Rose Peach, &c. (how much do we owe to Donald Beaton in the past, and to John Pearson and others in the present, for these beautiful bedding flowers!); the Verbena's rich, kingly, purple; the Lobelia's brilliant blue; the dwarf Ageratum's softer shade of gray; the Calceolaria's golden sheen; the clear, bright yellow of the Pansy and Marigold; the deeper hues of the Gazania, Tagetes, and Tropæolum; the varied tints of the Petunia, from white to velvety purple, pale pink to dark maroon—how could they look on these jewels, in their setting of emerald, this exquisite picture, framed by dark, glossy evergreens, or (as at beautiful Hardwicke), by tall, graceful arches of Honeysuckle and the climbing Rose, and not confess that the scene before them, as a brilliant display of floral beauty, outshone their brightest dreams?

"Will you be good enough," I hear it said, in satirical tones, by some resolute opponent of the summer system, "to invite your gardening grandfathers to stay the night; and will you oblige me by supposing that, while their ghostships are in bed, one of those little incidents, not uncommon in this country, which go by the name of thunderstorms, shall 'drench our steeples, drown our cocks,' and play upon your bedding out? And will you favour me with your opinion, as to what those ancient florists would say, when they looked out o' window next morning, and saw how your fine-weather sailors had weathered the storm, how, with heads drooping, and all the colour gone from their faces, they crouched, limp and draggled, naked and crippled, wrecked and broken-hearted, gazing in mute despair upon all their torn and faded finery, floating upon the green sea around?"

I must honestly answer, that if the beauty of summer bedding-out depended upon the flowers to which I have referred, these ghostly, gardeners would say, that they preferred a thousandfold the simpler prettiness, which no rains could mar, of their hardy and varied plants, and shrubs, and trees, to the brilliant, but ephemeral splendour which delighted them yestereve. I should feel, speaking as a cricketer, that the satirical opponent had made a clean hit for six, and that there must be a change of bowling. Messrs. Flower and Bloom being too much alike in style, I should substitute for one of them Mr. Leaf. The alternation is irresistible.

Since my first acquaintance with the bedding-out system, and I have known it almost from its birth, I have always advised, and introduced into my own garden, a large proportion of those plants which have beautiful foliage, simply because, being weather-proof, they are attractive from first to last, from the time of their appearance in the beds to their removal for safety, or destruction by frost. When Koniga and Cerastium, and "Flower of the Day," and "Manglesi," and "Golden Chain" (still one of the best) Geraniums (we knew not then in our terrible ignorance why they should be called Pelargoniums, and I have been told that there are still two or three gardeners in very obscure localities, who are not quite clear on the subject), when these were our only foliage plants, I used them largely; and well I remember the joyous welcome, which we gave to Bijou and Alma, Cloth of Gold and Golden Fleece (I once saw it designated as "Golden Fleas"), as more recently to the lovely Flower of Spring, Crystal Palace Gem, and May Queen.

Not with the same unmixed gratification do I recall the introduction of the darker foliage. I obtained seed of Perilla nankinensis, before any of my neighbours knew of it, and I determined to galvanise them in the succeeding summer with a shock of astonishment, and to turn them green with jealousy. I turned myself black instead. My vaulting ambition over-jumped itself by several feet, and I came down in the mud before my tittering friends. You know how sparingly this melancholy leaf must be used, and you will therefore readily imagine the effect produced in a garden of which it was made the predominant feature, appearing in more than half the beds. I can only compare its aspect to that of one of the ugliest objects with which I am acquainted, and, I venture to add,

most unchristian also, for it suggests neither faith nor hope—the top of a funeral hearse.

After this, as you know, our gardens were enriched by the far more cheerful and charming leaves of the Iresine and Amaranth, Coleus and Beet. These are grand additions, and are most effective in combination with the bright summer flowers, and in contrast with other foliage plants, such as the gold and silver leaved Pelargoniums, the Centaurea and Polemonium (both introduced as bedders by Mr. David Thomson, then at Archerfield), the Pyrethrum and variegated Veronica. Some complain of difficulties in cultivation, but no plants are more easily propagated from cuttings than the Coleus and Iresine, or from seed than the Amaranthus, Beet, and Perilla. I always throw in a good trowelful of rich manure, when planting the Iresine and Amaranthus (of the former, Lindeni and acuminata are very superior to Herbstii), harden off my Coleus Verschaffeltii carefully and gradually, and plant the second week in June. In adverse weather, Coleus, Amaranthus, and Iresine may look unhappy, and even lose some leaves at first; but if their feet are kept warm, in the socks which I have recommended, they will soon recover. Beet and Perilla require no coddling.

Who forgets his first interview with Mrs. Pollock—how he gazed in fascination upon those lovely tricolor leaves, then worth half-a-crown apiece? The story was told of an enthusiastic florist, that he noticed one morning a sudden and mysterious alteration in the demeanour of his wife. She was cold, sullen, and morose. Insisting upon an explanation, he was reluctantly and tearfully told that he had been murmuring in his sleep fond praises of "a Mrs. Pollock!" Mrs. P., Lady Cullum, and Sophie Dumaresque are the best in this section for planting *en masse*.

And then the bronzes—very striking and effective when properly grown and grouped, and, so far from being injured by our summer storms, smiling upon us more brightly than ever, when they have been "washed, just washed in a shower." I have been very successful with Luna, Mrs. Longfield, and Beauty of Calderdale—but I now prefer, with much gratitude to the raisers, Messrs. Downie, Laird, & Laing—Crown Prince, Imperatrice Eugenie, Lord Rosslyn, and Marquis of Lorne. The variegated Ivies, too, are also extremely pretty, whether as beds or as edgings. Mr. Grieve, of Culford, showed to me, at the Provincial Exhibition of the Royal Horticultural Society at Birmingham, a new variety, having a black and gold horse-shoe on a bright green ground, very distinct, and sure to be popular.

I did not mention, when speaking of the darker foliage, the Oxalis and the Alternanthera, because the former seems too earth-like in colour to be effective in beds, and the latter has been, with me, capricious and weakly. I also think that Echeverias and Sempervivums are more appropriate to the rockery than to the summer garden, and I am inclined to believe that a snug nook in the same habitation will prove most suitable for that exquisite gem, Mesembryanthemum cordifolium variegatum, with its bright little purple flowers peeping out from its golden leaves.

And these latter words remind me how many of our plants with variegated foliage have beautiful flowers as well, to wit, of Pelargoniums, Flower of Spring, May Queen, Silver Nosegay, Bijou, Cloth of Gold, Crystal Palace Gem, Golden Fleece, the Tricolors, and Bronzes, and Ivies.

Let me therefore advise that in the summer garden foliage and flowering plants be intermixed, in circles, diamonds, panels, à la pin cushion, and in other designs, so that the one may support the other, both in prosperity and in adversity, both in wet weather and in dry.

When I have added to this, dig well, dung well, put out plants few and good, rather than numerous and scraggy, but such as will eventually quite cover your beds, note down the defects of this year's arrangement, that you may correct them hereafter, keep your ears open when visitors come, and your eyes when you go a-visiting,—I have only to thank you for your kind patience, and to resume my pipe.

S. R. H.

THE magnificent specimen of Musa Ensete in the Palm house at Kew now shows a strong flower spike. This noble Banana has been planted in its present position a little over two years.

NOTES OF THE WEEK.

— THE Madresfield Court Grape is now fruiting finely in a cool orchard house at Chiswick. Considering its excellent Muscat flavour and general fine character, the fact that it can be grown so well in an unheated house makes it a peculiarly valuable fruit.

— THE grandest plant of *Lapageria rosea* we have ever seen in a pot is now in flower at Mr. Williams's Victoria Nursery, Holloway. It is trained over a large balloon-shaped trellis, and is literally covered with flowers of the largest size.

— WE learn that Messrs. E. G. Henderson have received some striped and otherwise beautiful forms of *Gentiana excisa* from the Alps. These are great novelties among Alpine plants, and we therefore trust that they will not fail to grow and increase, as they would prove precious additions to our rock-garden flora.

— AT the last Crystal Palace Flower and Fruit Show, Mr. Keyncs, of Salisbury, distinguished the 50th anniversary of his career as a floral exhibitor by sending in probably the finest collection of Dahlias ever shown at that place. They were of great size, perfect symmetry, and of every variety of colour. The judges were unanimous in congratulating him on his great and deserved success.

— THE Chinese Quince, which is cultivated as an ornamental shrub, is stated, by a correspondent of a southern American paper, to produce fruit in Georgia so large as occasionally to weigh over three pounds. Instead of being of a greenish colour, as further north, it is of a lemon yellow in the south. It is coarse-grained, dry and woody everywhere, and of no economical value.

— WE have to thank Messrs. Rivers, of Sawbridgeworth, for an opportunity of examining some of the new Nectarines of which we spoke in our last issue, and have only again to call attention to their remarkable distinctness and goodness of quality. Intending planters will do wisely to bear them in mind this season. We hope to notice them individually in due time.

— MR. S. T. KELSEY, of Pomona, Kansas, has a contract to plant trees, 160 acres every 10 miles, with the Atchison, Topeka, and Santa Fé Railroad, for 300 miles. He furnishes the trees and takes care of them for eight years, and has for compensation 640 acres at each place, including the 160 acres planted. The object of the Railway Company is to add to the value of its remaining lands, to ascertain and show the time required to obtain a remunerative forest, the best methods of cultivating, and what trees will succeed best.

— *Polygonum cuspidatum* is the most stately and at the same time the most graceful hardy perennial now in blossom. The stems rise from 6 to 9 feet high, and are laden with branchlets strung with small racemes of creamy white blossoms. The plant is most valuable, and well deserves good treatment and a good position. It is seen to most advantage as an isolated tuft on the grass in the pleasure ground. It loves rich deep soil. Fair specimens of it may now be seen in Battersea Park and in the gardens of the Royal Botanic Society, Regent's Park.

— ANOTHER fatal accident has happened to a market gardener's workman, Daniel Lewin, of Rainham. He fell asleep on the waggon, fell off, and was crushed to death under the wheels. He had then been up eighteen hours, and would not have reached market for two or three more. Occasionally he got to bed at 9 and rose at 4 or 5 o'clock, but when the cart went to market he had to work late. He was sober. The jury returned a verdict of "Accidental death," seven jurors being strongly of opinion that men should not be worked for so many hours.

— WE have received from Messrs. Fisher, Holmes & Co., of Sheffield, some noble blooms of a new variety of *Lapageria*, named by them *rubra grandiflora*, concerning which they state that as many as between two and three hundred blooms have been open on a plant at one time, although constantly reduced for purposes of propagation. The flowers appear to be of a deeper colour and to have longer tubes than those of *L. rosea*, whilst the leaves are longer and possess more substance than those of that sort. It seems indeed to be altogether a freer flowerer and a stronger grower than *L. rosea*, and therefore a great acquisition to the handsomest type of indoor climbers.

— THE old historic site of Say's Court, remembered through its associations with the ancient family of Evelyn, and as a residence of the Czar Peter, during his stay as a shipwright at Deptford Dockyard, is now undergoing a transformation, eight of the 15 acres of vacant ground around it having been set apart as a public recreation ground for the use of the people of Deptford. Mr. W. J. Evelyn, the present representative of the family of the author of the "Diary" and "Sylva," has generously borne the expense of clearing, draining, levelling, and preparing the land for its ultimate purpose,

and the other day visited and inspected the works now in progress, which are under the superintendence of Mr. Evelyn Liardet. It is understood that should his gift be used in a manner satisfactory to him, Mr. Evelyn will probably allow the remaining portion of the ground to be used similarly. The old Manor House of Say's Court is to be restored, and will be an interesting object to future visitors, the remains of an old tree planted by Peter the Great being still shown near it, in a portion of what was once the garden of Say's Court.

— THE *Warrington Guardian* states that Colonel Wilson Patten has announced his intention of giving £3,000 towards the public park now being purchased for Warrington.

— THE Marquis of Westminster has issued an invitation for a picnic to be held in the grounds of his country seat, at Cliveden, to all those masters and mistresses who are recognised by Government as teachers in the numerous schools on his lordship's London estate, including Westminster, St. George's, Hanover Square, Pimlico, and other districts.

— ON Tuesday night week, Kate Black, aged two years, wandered into the road and was run over by a cab. It was proved at the inquest that the sad accident was one of many which resulted from the absence of children's playgrounds. After hearing the medical evidence in the case, the jury returned a verdict of "accidental death."

— AT a flower show held a few days since in the town of Haverfordwest (the first exhibition of the kind ever held there), a very handsome tree of the common Myrtle was sent for exhibition. The plant, which was said to be over 100 years old, at one time belonged to Catherine Warren, the intimate friend of John Wesley, and grand-daughter of Catherine Wogan, of Wiston. The plant was exhibited by Admiral Stokes.

— A PLANT of *Psophocarpus (Dolichos) tetragonolobus*, a Leguminous climber, is now fruiting in a stove at Mr. Parker's Nursery, Tooting. The flowers are of a beautiful sky-blue. The plant has about two dozen pods on it at present, each of which measures twelve inches or more in length: they are large and quadrangular, each angle being very deeply serrated. To lovers of plants remarkable for the singularity of their fruit, this will be a desideratum.

— *AGAVE geminiflora*, a very graceful Aloe, not uncommon in a small state in many good collections of plants, and usually called Bonaparte's juncea, is about to flower in Mr. Williams's fine collection of conservatory plants in the Victoria Nurseries, Holloway. The specimen throwing up the bloom-spike is one of the largest and finest we have seen, and is worth seeing, even if not in its present interesting condition. The plant has very rarely flowered under cultivation.

— AMONG the less common edging plants now used about London, the best is decidedly *Coprosma Baueriana*, a finely variegated glistening evergreen, which may be pegged down so as to form very neat edgings. The leaves are of such a fine shining green and the variegation so rich that the plant reminds one of *Arabis lucida variegata* when in fine condition, though the leaves are much larger than those of the *Arabis*. Good examples of it may be seen at the Wellington Nurseries, and also at Mr. Herbst's Nursery at Kew.

— THERE is a recently imported batch of unusually large specimens of the Elephant's Foot plant (*Testudinaria elephantipes*), now in the Victoria Nurseries. The huge bulb-like rhizomes are dragged off their native plains without roots or stems. Placed on sphagnum, in a moist stove, they soon however begin to emit thick white roots from the lower surface, root at once if potted, and soon commence to send up their twining stems as if nothing had happened.

— THE *Standard* throws out a suggestion that a large farm, or several farms with a variety of soils, should be acquired, either permanently or for a period, on which well-directed attempts should be made to solve the problem of the best means of Potato cultivation. All methods hitherto suggested should be fairly tried, and new ones applied for counteracting the disease. It then goes on to particularise a number of experiments which might be tried, most of which, however, have been tried, and well-tried too, by Mr. George Maw, and other cultivators.

— AN Arboretum was opened the other day at Lincoln. The grounds, which occupy an area of between thirteen and fourteen acres, command a pleasing prospect of the city from the east end, and have hitherto been used as a place of public resort. Since they came into the possession of the Corporation, however, new walks and terraces have been formed, and the whole has undergone extensive alteration and improvement. The close proximity of the park to the town, and the extensive view commanded from its position, must make it one of the most popular resorts of the inhabitants.

"SCIENTIFIC" MEN.

THE following morsel from the *Globe* is a good example of the result of the confused meaning of the word "scientific" that exists in the mind of the public, and too often in that of those who write for it:—"During the former Potato famine, scientific resources [*i.e.*, human knowledge] failed to ameliorate the condition of the crop, and the best means of arresting the disease was to cut the stalk level with the soil. Men of science, at that time, as now, recommended people to plant other vegetables. [This is the course that would probably be followed by most people of intelligence.] We hope ordinary Potato cultivators will not despair, or rely too much upon scientific resources [*i.e.*, on what can be done by man to obviate the disease, we presume.]"

In the above paragraph it is clear that the writer supposes "science" to be something quite different from the knowledge possessed by ordinary mortals.

THE INDOOR GARDEN.

WATER A PLANT CLEANSER.

WE know that water forms the bulk of vegetable matter. But while it feeds it likewise cleanses; and even while doing this latter only, it is rendering the cultivator the highest service. For this end partly, dews are distilled, and the rain is sent down in cleansing showers. They wash leaf, flower, branch, bark, and root; and it is extremely doubtful if, with all our engining and syringing under glass, we wash our plants sufficiently clean. Our heaviest rinsings are but poor substitutes for the hearty downpour of a thunderstorm. What a powerful and thoroughly efficient washing machine is that rent thunder-cloud! and how much of the extraordinary power and energy of vegetable life, noted after it, originates in the efficient and thorough cleansing which it gives to plants! We talk of its having cleared the air, in explanation of its wonderful effects on vegetation; it would be much nearer the truth to say it had cleaned the plants. Let us do likewise under glass, and we may witness similar rapid developments of plant life. Such are by no means unknown. Orange trees, Camellias, vines relieved of their crops, Peaches of their luscious burdens, have been rinsed clean by powerful waterings with the most beneficial results. But to ensure such benefits care is needed to imitate the thunderstorm as closely as we can. Such downpours are mostly soft and warm, and, it may be, surcharged with atmospheric gases. To such qualities chiefly they doubtless owe their sanitary efficiency; while they cleanse they likewise stimulate. On the contrary, our water is too often hard and cold. The result is a check, rather than a help, to growth. We often see this also after a thander shower, when rain like liquid ice or hail falls instead of the warm shower. The plants are battered and bruised rather than cleansed and stimulated. It is often just so with our artificial washings; cold, hard water, charged heavily with lime, is raised often many feet, and dashed against the trembling flowers and shrinking leaves. The results are only evil, as might have been predicated. We must copy nature as closely as possible. Use soft warm water, and charge it slightly with a few knobs of carbonate of ammonia or smelling salts, and then apply it without stint, and we must needs reap the highest sanitary advantages from the artificial thunderstorm. D. T. FISH.

FILMY FERNS.

A LONG list might now be made of these delicate and lovely little plants, which are as well grown and as successfully propagated as any other tribe of Ferns. There are, probably, more than forty species in the fernery at Kew, and scarcely a less number might be found in the nurseries at Foot's Cray, and in those of Messrs. Backhouse, of York; while in almost every other garden of note, a greater or less collection of these pets may now be found. Like everything else, now we know how to manage them, their cultivation seems simple enough, and we wonder how it was that cultivators used to fail with them. Shade and moisture are the two great necessities of their existence; they are absolutely requisite—a gleam of direct sunshine, or a breath of dry air, and the poor little plants would be killed outright. Guard well against these two evils, and all will go well. Soil is a secondary thing with them; they require but very little; the wet surface of a piece of porous stone, or a block of wood, suits them quite as well, or even better. I like best to grow them amongst pieces of sandstone, for though I have several growing well upon the stems of tree Ferns and other vegetable substances, yet

these, with the continued moisture, are apt to rot; they are also likely to produce fungi, both of which circumstances may bring about unpleasant results. A thorough drainage for the pots, and a little fibrous and very sandy peat sprinkled in between the blocks of sandstone, are what experience teaches us to be the best means of growing them. It must be a very snug and quiet corner where they will grow without the protection of a bell-glass; still even this has been accomplished. There is a cavern, deep and shady, with a trickling rill of water in it, in the rockery at Messrs. Backhouse's, where several species grow luxuriantly; but in few gardens can the natural habitat of these plants be so closely imitated. The safest and best plan is to cover them with a bell-glass while young, and as they increase to give them a square hand-glass, the top of which is made moveable. With glasses so made the top can be lifted off without disturbing or injuring the fronds. During summer these plants cannot be kept too moist, if the drainage be good; they may safely be sprinkled with a very fine-rosed watering-pot every morning. They enjoy having their fronds wet. In winter they should be kept a trifle drier, not so much on account of the Ferns, if the air be warm enough, but to guard against mildew. D.

Culture of Melocacti.—In answer to Mr. D. Teasdale's question (see p. 167), as to the best means of preserving and growing his Melocactus, I venture to give an extract from a work which I published a few years since on the culture of Cacti, ("Culture des Cactées," par F. T. Palmer, edited by A. Goin, Paris), in which the numerous plates relating to grafting Cacti explain the different processes respecting that mode of propagation at a glance. "He should take a *Cereus Peruvianus* of about the same diameter as that of the base of his plant, cut off the head of the former, but not so low as to come upon the hard ligneous axis, and then pare off the hard epidermis and ribs for about an inch. He should then take off a fresh slice from the base of his Melocactus, also paring off about an inch of the epidermis all round, and place his plant on the top of the *Cereus*, cut to cut. Then with a doubled string of coarse worsted, tie on the graft firmly, binding the worsted backwards and forwards from the spines of the one to those of the other, but avoiding to cross the apex of his plant, as it might stop its growth. If the weather continue warm enough for about a month longer, the parts will unite before winter, but the ligature had better be left on until the next summer. The precaution of paring off the hard skin and ribs is absolutely necessary, as the juicy centre contracts, and the rind or epidermis does not; there would consequently be a void formed, sufficient to prevent all cohesion, be the graft tied on ever so tightly. His Melocactus will keep very well on a shelf in a dry greenhouse during the winter, and he can graft it the next summer; but an established graft will keep far better, and will start into growth the next spring, thus saving a year and perhaps the plant, as they sometimes rot, even if kept ever so dry. In a hothouse, a grafted Melocactus may be kept in vegetation all the winter."—FRED. PALMER, *Versailles*.

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Miltonia candida grandiflora.—A fine specimen of this peculiar looking Miltonia is now in flower in Mr. B. S. Williams's collection at Holloway.

Drainage of Pots.—In America in the best nurseries and flower-growing establishments no drainage is used in most of the pots. This applies to *Bouvardias*, *Gardenias*, tree *Carnations*, &c., as well as the softer and commoner bedding-plants.—D.

Oxalis rosea as a Pot Plant.—This delicate and pretty rose-coloured annual is found to be excellent for conservatory decoration grown in pots. The flowers are larger than in the open ground. It has been much used at Kensington this year.

Dendrobium chrysois.—This brilliant-flowered Dendrobe, introduced from Assam in 1870, is now bearing over twenty spikes of golden crimson-blotched flowers at Manley Hall, near Manchester. The striking beauty of the flower is greatly enhanced by the deep fringed margin of the lip. It possesses a vigorous constitution, and grows freely in a moderate temperature.

HARDY PLANTS IN FLOWER ROUND LONDON.

(FROM AUGUST 23RD TO SEPTEMBER 4TH, INCLUSIVE.)

BY OUR OWN REPORTERS.

<i>Aplonappus</i>	<i>Colchicum</i>	<i>Podolepis</i>	<i>Tripsacum</i>
<i>Fremontii</i>	<i>crociflorum</i>	<i>affinis</i>	<i>ductyloides</i>
<i>Aster</i>	<i>Inula</i>	<i>Potentilla</i>	<i>Wahlenbergia</i>
<i>bessarabicus</i>	<i>grandiflora</i>	<i>sulphurea</i>	<i>gracilis</i>
<i>leucanthemus</i>	<i>Galatella</i>	<i>Satureja</i>	<i>Valloradia</i>
<i>Bignonia</i>	<i>cana</i>	<i>montana</i>	<i>plumbaginoides</i>
<i>grandiflora</i>	<i>dracunculoides</i>	<i>Stevia</i>	<i>Vernonia</i>
<i>radicans</i>	<i>Mentha</i>	<i>compacta</i>	<i>novaeboracensis</i>
<i>Browallia</i>	<i>Pulegium</i>	<i>Teucrium</i>	<i>Zephyranthes</i>
<i>demissa</i>	<i>Petunia</i>	<i>massiliense</i>	<i>nivea</i>
	<i>nyctaginiflora</i>		

Plants in this list are almost without exception such as have come into bloom during the past week.

THE LARGE FLOWERED MAGNOLIA AT HOME.

BY PETER WALLACE.

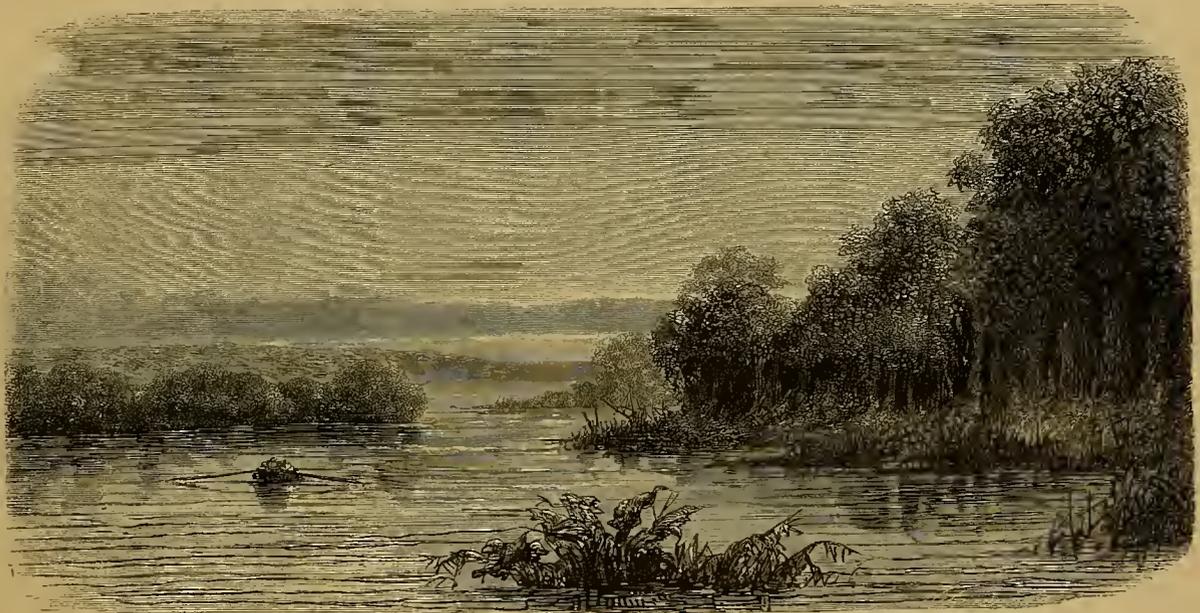
GRAND objects are the Magnolia groves of Louisiana, Southern Texas, and other southern states of America, rising, as they invariably do, on the slopes of the lagoons, bayous, and river banks, and assuming the form of noble forest trees. These Magnolias, individually as well as collectively, are grand, their contour of deep green foliage being bold and majestic, while their large blooms of the purest white fill the air with ambrosial perfume. I am unable, in short, to give in writing anything like an adequate description of these groups of stately trees massed by nature's hands, often in most imposing positions, and in almost every stage of growth, from the thin sapling to giant stems measuring at the base from 6 feet to 9 feet in circumference, and towering from 50 feet to 70 feet in height, affording shade so dense as to defy the sun's rays to penetrate it. To no particular parts of Louisiana, Florida, and Southern Texas are these noble Magnolia trees confined. You come upon them at intervals spread over a wide tract of country, and invariably where the soil is rich and deep, near river banks, by the sluggish waters of the deep bayou, or forming an emerald fringe to the still lagoons, clothing the islets that are scattered among them in

Nature's hand for calm repose, contains some splendid examples of the Magnolias and other fine Texan trees, which I have no doubt will be preserved for centuries to come. Unfortunately, the Magnolia only lives as a standard here and there in the south of England; but it forms a grand plant for high walls.

THE FLOWER GARDEN.

THE CULTURE OF ASTERS.

My beds of broad-petalled Aster, consisting of the following kinds, viz.: three of Pæony Perfection, two of Victoria, and two of Emperor, are now in full beauty; each bed is 40 feet long and 4 feet wide. The Asters are planted in rows, 1 foot from row to row, and 9 inches apart in the row. Of Quilled Asters I have two beds, containing about 400 plants. I do not grow these so extensively; they are exceedingly beautiful, but not so handsome or effective as the others. I prefer planting Asters in beds, and, where possible, in a piece of ground which has been trenched and well-manured in autumn, and exposed to the winter's frost and snow; such is the starting point for success. The beds I have planted with Asters this year were



Magnolia Islands, in Texas.

nature's gayest livery, and affording shelter to the innumerable hosts of duck, teal, and widgeon that frequent the lagoons.

Some of the finest examples of Magnolia grandiflora I saw during my stay in America were on the Buffalo and White Oak bayous, the former being the ship channel from Galveston to Houston. The trees varied from 50 feet to 70 feet in height, having beautiful cone-shaped heads, which in July, 1871, were covered with hundreds of their fine blooms, which the coloured children, with monkey-like activity, managed to secure and carry to the railway stations and elsewhere for sale, and for which they found ready purchasers. Americans have a great love for flowers, and being often unable to spare time from business to cultivate them, they readily pay large sums for cut flowers when they can obtain them. It is to be regretted that the feller's axe spares nothing in its way when opening up a clearing for cotton, sugar, or corn; and annually hundreds of fine examples of Magnolias, as well as other fine trees, are cut down, converted into timber, or burnt. Fortunately for Houston and its neighbourhood, a love for trees and flowers has sprung up, and efforts are being made to preserve some of the best pieces of wood and grove in the vicinity. The new cemetery at Houston, a place shaped by

thoroughly prepared for Hollyhocks last year, and for Dahlias previously, and were in good condition—just in the state I would prescribe. There is a difference between planting and preparing flowers for decorative purposes, and for highly cultivated or exhibition wants. More care, more thought and attention are required for the latter; but how fully is the earnest amateur repaid when he sees in every flower his care and extra attention crowned with success!

Suppose, then, a piece of ground has been secured, and the necessary arrangements made; procure seed from the most reliable source some time during February or March. Half of this I recommend to be sown in the last week of March, in pots or pans; the remaining half to succeed about the 8th or 10th of April. Place on a gentle hotbed, and, as soon as the fourth leaf is produced, transplant carefully into small pots or a warm and sheltered border in due time, not neglecting proper care and attention to the watering, keeping clean, and giving plenty of air when under glass on all favourable occasions. The warm April showers will bring the growing seedlings onwards to the 20th of May. At this time I begin to count up my stock, clean the ground by lightly forking and raking it over, and so prepare for the general planting (which may

be extended till the 16th of June), marking out the beds and paths according to the desired lengths and sizes. If one or more beds are to be planted, take your line and place it up the centre of the bed, and, starting at 6 inches from the end, at intervals of 1 foot, make with a fair-sized dibbler a hole 6 inches deep. On either side of this line make two other lines about 9 inches apart, with holes in a line across the bed. You can then tell precisely the number of plants required. It is my custom to raise separately each colour and sort of Asters, &c., and plant them out, so that the colours contrast; for instance, one or two rows of blue, then white, then red, and so on. Having made the holes, fill up each with water, and allow it to sink before a plant is inserted; then carefully place each plant in its hole; surround it firmly with the earth, never allowing a vacuum to exist between the roots and the soil. Choose, if you can, the time just previous to a good downpour, otherwise, having planted, it is well to give a surface watering to each plant. I have not given a drop of water since planting this season. I well recollect in my school-days a good and worthy old gardener spicing my labours with this good advice (it was a simple lesson, but none the less important; I applied it from his lips and do yet adhere to the plain common-sense teaching, which will not prove a failure in its results): "My boy," said he, "put that water in the hole first and give the plant time to find it; it is better than allowing the water to find the plant." I have proved the good effect of his advice in transplanting trees and shrubs. Just as the Asters show bloom, carefully go over them and remove part of the flower-buds, and, whilst I do not put my faith in the antiquated, worn-out, and tattered garment of "garden secrets," let me advise how many, which, and what to leave, for on this greatly depend the beauty, size, and full development of flower and seed. I usually leave three flowers, the centre and two top terminals, and all the foliage possible. To digress for a minute, if any one wishes to perpetuate a good strain or variety of Stock or Wallflower, and produce doubleness, let him select a good habited simple flower, cut off the flowers from the laterals, and allow only the main or central spike to bloom, which should be reduced, before its seed-vessels are formed, to three, six, eight, or twelve blooms, according to the vigour and energy of the plant. I find on this principle that, if the weather will permit, I can, with certainty, produce better home-grown Asters than from imported seed. The difference is great when one sees them side by side. Having thus far proceeded in thinning, let a top-dressing of well-decomposed strong manure be placed over the beds, and, if the soil is comparatively cold or wet, a sprinkling of about an egg-cupful of guano round each plant, just midway, or two or three sprinklings of soot during the season will benefit them, although not always necessary. I also attach a stake to my plants, and loop the flowers to it in case of heavy wet or wind, so as to secure them. By planting-out a few days later those sown last, the season of blooming is prolonged. Owing to the wet and comparatively hot season we have had, my Asters are forward; the fact is, they have made an uninterrupted growth and are now in full beauty, the central blooms being open, while the lateral ones are more or less backward. The last and not least requirement is to secure good seed; we have only to mark any worthy or beautiful and distinct variety, take it up if the weather is not likely to allow of its maturation of seed outside, pot it, and keep it under glass until it has ripened its seed.

JABEZ J. CHATER.

Gonville Nurseries, Cambridge.

Chrysanthemum carinatum.—Amongst hardy annuals growing from eighteen inches to two feet high, it would be difficult to find anything more noble or showy than this plant and its almost numberless varieties. It is, perhaps, better known as the Tricolour Chrysanthemum, from the three colours that exist in one of the best known forms of it. Much attention has been bestowed upon the different varieties of this annual by Messrs. Carter & Co. at their seed farms; and by saving seed from the largest flowers and the most distinctly marked colours, some beautiful strains of it have been obtained. Long strips of land stretching across one of their farms, planted with these Chrysanthemums, presented a fine effect during the first week in August. The white, the double white, and the double quilled white, with similar differences in the yellow varie-

ties, were associated with several different variations in the tri-colours, many of which had blooms three inches in diameter. The profuse way in which this Chrysanthemum flowers, and the purity of its various colours, combine to render it one of the best annuals we have for clumps, amongst and in front of shrubs, and for telling effect in large bedding arrangements.—W. T.

THE GREAT WATER-DOCK.

(RUMEX HYDROLAPATHUM).

THE lamentably bare and monotonous aspect which the margins of pieces of artificial water too often present, might be very wisely, cheaply, and effectively relieved by the introduction of a few of our larger native aquatic plants, such as the Typhas, taller Carices, Sparganium, Arundo Phragmites, Iris Pseud-acorus, and the subject of our present notice. The great Water-Dock is common in most parts of Britain in wet ditches and by the edges of streams and pools of standing water, growing to a height of from three to five feet, and forming a huge pyramidal mass of immense leaves. During the summer they continue of a dark green colour, but at the approach of autumn change to a deep lurid red hue, which they preserve for a considerable time, mingling their tints not inharmoniously with the various shades of brown and yellow foliage which mark the decline of the year. It is at this period perhaps that the plant is most striking in appearance, but it is at all times a bold and effective object, suggesting more than



The Great Water-Dock. (After Smee.)

any other British plant the development of vegetable growth which characterizes the flora of sub-tropical climes. We call the attention of our readers to this plant as one that will well repay the trifling trouble of procuring and planting it. A root or two deposited in the mud near the bank of a pond or slow stream will require no further attention.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Mesembryanthemum cordifolium variegatum.—This, I find, is one of my best variegated plants in a large collection. It is admirably suited for bedding, and does not suffer in the least from cold or heavy rains.—W. FAIRBAIRN.

Ornamental Grasses.—These are by no means sufficiently known or grown. One of the most graceful of them now in flower is *Piptatherum multiflorum*, a plant which is about a yard high, and which produces elegant airy panicles in profusion. A specimen of it may be now seen in the herbaceous ground at Kew.

Double Portulacas.—These charming little flowers, which look like miniature double Roses, are excellent for various purposes in the flower garden, as for example for planting here and there on the bare parts of the rock garden, as carpeting plants beneath taller subjects, and as edgings to small mixed beds.—LOUISA M.

Roses.—I have a Rose garden which produces very fine Roses in the summer, but after the first bloom most of my plants drop their leaves, or, if not, the leaves are covered with black spots, and have a burnt, shrivelled, unhealthy appearance. I gave them a good coat of manure in the winter, and forked it in in the spring, as directed in Mr. Hole's book. As to watering, we have had plenty of rain, besides which I gave them manure-water.—ROGER. [Defective drainage or the want of a free circulation of air will produce the effects of which you complain. If soil and situation are right, give less artificial moisture to the roots next season; and I would recommend you now to syringe your trees with tobacco-water, or to wash them with soap and water.—S. R. H.]

THE GARDEN IN THE HOUSE.

CULTURE OF PLANTS IN ROOMS.

(Continued from p. 196.)

RAISING PLANTS FROM SPORES.

SPORES are the germ-cells of Cryptogamous plants. Of these only the higher groups of Ferns, Lycopods, and Rhizocarps have, up to the present, been cultivated in our plant-houses and rooms. In rooms, hardly any other kinds than Ferns are raised from spores, and the following remarks are therefore more particularly applicable to them. The spores of Ferns should be sown in pans in coarse fibrous heath soil, with which the pan is filled up to within a quarter of an inch from the rim, in the same way as has been recommended for the sowing of the smaller kinds of seeds; or pieces of close fibrous peat soil may be used. In both cases the soil is kept moist entirely from the saucer in which the pan is placed, or in which the pieces of peat soil have been laid. It is also to be recommended that the heath or peat soil should be previously submitted to a heat of from 170° to 212° Fahr., in order to destroy any seeds of weeds, eggs of insects, worms, &c., which it may contain. Spores taken from Ferns which have lain in a herbarium for ten, and in some cases for fifteen and twenty years, have germinated and produced fine plants. The late Herr Plaschnik, curator of the Leipzig Botanical Gardens, one of the earliest and most successful of German Fern growers, was one of the first to introduce into cultivation a number of species of Ferns which he raised from spores taken from herbariums. The proper time for gathering Fern spores for sowing is when the membranous spore-covers on the underside of the frond have become of a ripe brown colour. Parts of the frond should not be chosen on which these spore-covers have already burst and discharged their spores, as in this case only spore-covers without spores would be sown, and no result would follow. The inexperienced amateur might very easily mistake these small spore-covers for the spores themselves, and so make the same mistake in sowing them as if he were to sow the empty shells or pods of seeds of phanerogamous plants. He should therefore assist his eyes with a magnifying glass in examining the condition of the spores which he intends to sow. This will show him the spores in a very fine powder, and the little sac-like spore-covers, when thus magnified, will be readily distinguished. In the case of Fern-fronds kept in a herbarium, or lapped up in paper, the spores will generally be found to have fallen out of the spore-covers, and adhering to the surface of the frond or to the paper, while the spore-covers or receptacles will, in the greater number of cases, be quite empty.

When spores are taken from the growing plant for sowing, portions of the fruit-bearing fronds should be cut off when the spore-covers begin to assume a brownish hue. These should be placed in a closed packet of smooth paper, and laid in a dry place for some days. When it is required to sow them, the paper packet should be carefully opened and spread out, so that none of the spores which have fallen out of their receptacles may be scattered. The spore-covers with their spores should then be carefully scraped from the frond with a knife into the paper. A pan having been previously prepared with suitable soil, the latter should be moistened and the spores carefully shaken out of the paper upon it. These remarks are also applicable to spores taken from a herbarium. Even with very great care, it will sometimes happen that some of the spores will be scattered and carried by the wind to other pots or pans which stand prepared for other kinds to be sown in them, so that unless special attention is given, the cultivator may see various kinds springing up together in the same seed-pan. He will therefore do well, when sowing Fern-spores, to see that no other prepared pots, or Ferns with ripe spores, stand near. He should also sow each kind by itself, and then carry the pan to its place, wiping his hands well with a cloth before he commences the sowing of the next kind. When the spores are sown in a pan filled with heath-soil, the pan should be covered with a sheet of glass and placed in a shady part of a warm room, where even species from cool climates will germinate much better than in a cool position. The soil is to be kept

moist by pouring water into the saucer. Spores sown on pieces of fibrous peat should be covered with a bell-glass, or placed in a warm box or in the terrarium and kept moist in the same manner. The seed-pan may also be placed inside of a larger pan or a wooden box, and moss placed round it up to the rim. This moss being kept constantly moist, and the pan being covered with a bell-glass or a sheet of glass, an agreeable degree of moisture will be produced and all dangerous extremes will be avoided. From this time forward the seed-pans should be examined every day, and the condensed moisture wiped off from the inside of the bell-glass or sheet of glass from time to time. When a greenish tinge comes over the surface of the soil, it is a sign that the spores have begun to germinate. From this time forward the greatest care and attention are necessary, especially with the rarer kinds. The pans should now be placed in a better lighted, but yet shady position, every excess of moisture must be carefully guarded against, and the glass covering or bell-glass should be slightly ventilated, so that a circulation of fresh air may be always maintained. The condensed moisture should also be so often wiped off the glass that it will never drop on the young plants, as it would prove fatal to them. As soon as a few leaflets are formed, the seedlings should be transplanted, either several together in large pans, or single plants in small pots filled with heath-soil, and covered with a bell-glass or placed in a glazed case.—*Dr. Regel.*

ORCHID FLOWERS FOR TABLE-DECORATION.

It is instructive to note the progress made of late in the art of table-decoration. It appears quite an enormous leap from the mass of rich plate and gorgeous heavy bouquets that used to decorate the tables of the rich, to a style of the greatest possible simplicity, elegance, and grace. I do not condemn simplicity, for it is certainly a decided improvement; but to the use of hardy flowers alone, when tender ones can be had, I quite object. There are few ladies, who, however cultivated their taste, would not prefer an elegantly arranged table, gracefully decorated with sprays of various of our "bridal" orchids, mingled with other suitable relieving subjects, whether tender or hardy, to one composed solely of Harebells, Forget-me-nots, white Water Lilies, Veronicas, and grasses. The tables lately exhibited by Miss Hassard, Miss Blair, and others, sufficiently attest what can be done with hardy and greenhouse flowers; but at all the late exhibitions scarcely was there an instance where the blooms of Orchids and other tender plants were used to advantage. Those who might have successfully done it, no doubt abandoned the thought, when they beheld the tide of success flowing towards the simpler compositions. This, however, should not be so; for although hardy flowers are mostly within the reach of all, those who have, or can afford to obtain, the rich, waxy, and enchanting flowers of some of our Dendrobiums, Odontoglossums, Oncidiums, Phalenopsis, and many others, by an elaborate system of arrangement, can, in union with other suitable flowers, Fern-fronds, and Grasses, produce a style of table-decoration unequalled by the most elegant composition of hardy flowers alone. If the tables are only required for one night's use many flowers could be used that could not if they were required to stand for several nights; as, for instance, our *Aërides*, *Saccolabiums*, and some Dendrobiums, that would be of little service otherwise than wired, could be effectively employed; these may sometimes be advantageously used without wires, but, although graceful in the extreme when growing on the plants, they are too apt to assume a clumsy appearance if used for furnishing table vases unless wired, and if they are so done they cannot get moisture to sustain their blooms in that desirable plump condition they would retain should their stalks be inserted in water, damp sand, &c. Again, Orchid flowers are more capable, after being cut, of maintaining their freshness and colour for a considerable time, if placed in water, than those of most other plants.

Grass as an accompanying or relieving subject is good enough in its place; indeed, its presence is hardly dispensable; still its too lavish use is too often indulged in. We have now various forms of graceful ferns amongst our Pterises, Adiantums, Cheilanthes, Pellæas, &c., that would add nobly to the cause had they only a chance. At the Crystal Palace Great Rose Show this summer I noticed one table so furnished with the fronds of the beautiful Adiantum Farleyense as to make it quite objectionable, for although this is one of the most beautiful of ferns, its fronds are too closely covered with pinnæ to be of great service in this branch; small bits occasionally used may be of some consequence, but its whole character is too heavy to use much of it.

WM. FALCONER.

VASES OF FLOWERS.

WHAT horrid things some of the florists do give us in the way of bouquets! They pack the dear little flowers so closely together, such crowds of sweet faces massed, that you cannot half enjoy any of them. I should think that any one who really loves a flower would do it better justice. Each fine blossom or cluster of blossoms ought to have some quiet background to set it forth. Green foliage, in delicate sprays or handsome leaves, is according to nature's general plan. I remember the exquisite little floral ornaments in that pleasant sitting-room of B.'s. Shells of various kinds were made to do duty as vases; here a few Geranium leaves, with Rosebuds or Pansies in a shell turned up so as to hold water enough to preserve the flowers, and there a cluster of Sweet-pea blossoms, with foliage of some light graceful character. One handsome Lily, with leaves, is often quite enough for a flower-vase. I was not more than half a score of years old when I saw two vases of flowers on a mantel-piece which pleased me better than anything I had ever seen before, and their memory is still pleasing through all the years since that time. The vases were tall old-fashioned wine-glasses, and the flowers were only Nasturtiums, a spray in each, with their brilliant flowers, odd-looking leaves, and smooth curling stems. We want some large wide-mouthed vases and some big bouquets when flowers are plentiful. Some large vases we must have for the children to fill. Some flowers have such short stems that they cannot be managed in bouquets unless they are furnished with artificial stems of wire or straw. Hollyhocks and Balsams are of this kind. The best way to arrange these is in a plate of clean wet sand. Use plenty of Ferns or green leaves with the flowers.

R. L. F.

Plant Screens in Rooms.—To have living screens in drawing-rooms and saloons is a favourite practice at Trentham, Cliveden, and other large houses, and they might advantageously be introduced generally. Upright trellises, covered with the ivy green or any other suitable climber, and springing from oblong boxes, the soil being placed in narrow troughs, which are placed within ornamental ones of various materials and patterns, so that a particle of moisture cannot descend on the floor, and the whole so arranged that they can be conveniently moved to any part of the room where a screen may be desired, are elegant and useful ornaments in large drawing-rooms and saloons. Of course these screens are more suitable to very large rooms than to those of ordinary size. In large saloons and drawing-rooms, where a person reading or writing may desire to be cut off from the general glare or openness of the apartment, they are particularly useful. They are generally made of ivy, but at Trentham they are beautifully covered with the common annual *Thunbergias*, orange and white with dark eyes, and several other slight varieties. These are the common annual *Thunbergias*, which are sold at a few pence per packet. They are stove plants, or nearly so, and therefore only suited to the wants of those with plant-houses. Of course those on the trellises were grown in a warm moist house, and then removed to the mansion when coming into flower. The Ivy screen may be formed without the aid of glass. The best way would be to get a number of young fresh plants, with stems beginning to grow freely, train the stems to the wires of the erect trellis, and leave them in the air in some favourable spot where they might get established previous to being taken indoors. The Irish Ivy is the best variety.

R.

NOTES AND QUESTIONS ON THE GARDEN IN THE HOUSE.

Asplenium flagelliforme.—This is the most beautiful of all ferns for growing in the sitting-room. A plant of it in a suspended basket for the past two years is now the admiration of all who see it. The drooping fronds hang down most gracefully, each terminated by the long wire-like midrib, which is prolonged beyond the pinnæ in such a singular manner.

Window Boxes.—Our ordinary London Mignonette boxes have given place, of late years, to fine majolica troughs, overflowing with the most brilliant blossoms. But when we find the glaring colours of majolica associated with brilliant blossoms, it becomes difficult to fully and efficiently condemn the bad taste which groups many-coloured flowering plants in many-coloured receptacles.—W. T. P.

Pomponé Dahlias.—I find these pretty bachelor's-button-like Dahlias among my most useful flowers for cutting. The flowers are not one-fourth the size of the older kinds, and have a neatness and absence of coarseness about them, that makes them very attractive. My most favourite kind is one called German Daisy, which varies agreeably in colour, but there are various others quite as attractive.—Louise.

Creeping Jenny.—This native plant is now much used in London. In window boxes, drooping over their edges, and flowering freely, or grown in pots, or suspended over the area with its long shoots drooping down so as to cover the pot, and fall gracefully for nearly a yard below, it forms the most graceful and attractive plant now to be seen. It seems, above all plants, to have no objection to growing down into dark places. We sometimes see it planted on the edge of the narrow trench-like areas of the small suburban gardens, falling down into them, and perfectly clothing the wall with graceful shoots and yellow blossoms.

HORTICULTURE AS A PROFESSION FOR LADIES.

AN able suggestion regarding a new profession for gentlemen was made a short time since. Why, said the *Pall Mall Gazette*, should not Horticultural pursuits be erected into a "gentlemanly profession?" "Why not, indeed?" echoes a correspondent of the *Queen*. "And why not also, I beg leave to add, into a ladylike profession? I throw out the suggestion as affording a new and perfectly legitimate opening for the employment of women, and in a field in which numbers of ladies excel? Why should we not have our female Paxtons and Kents? Mrs. Loudon, instructed no doubt by her talented husband, imbibed a great taste for and love of the art; and other ladies might find in horticulture a profession which would be remunerative, and could not detract in itself in any way from their social status as gentlewomen. Leaving the laying out of landscape gardens and parks to the gentlemen, there is still, in other branches, a wide field open, in which ladies thoroughly educated in horticulture and botany might find employment, and in which their less fortunate sisters, with ordinary strength and less preliminary training, might work. I remember, a short time since, reading an account of a college or school of horticulture for women in America, and it has long been matter of astonishment to me that, in the present dearth of remunerative employment for women of the middle class, no one has as yet thought of making them 'gardeners.' I remember that one of my sisters and myself, in utter despair of getting any good work or good result in the way of flowers for effect or fruit for eating, from our coachman-gardener, took upon ourselves the superintendence of the greenhouse and outdoor garden. The former was a very large one, the latter a good-sized but pretty suburban piece of ground. We only stipulated for the services of our man to remove large pots, dig the ground (where very heavy), and wash the greenhouse. We went to work with enthusiasm, determined to succeed, and we did succeed of course; women afraid of soiling their hands or spoiling their complexion I do not address. My suggestions are meant for those who look upon the duties of life seriously, and who, being compelled by circumstances to earn their daily subsistence, would find in horticulture not only a remunerative but delightful occupation; and if the *Pall Mall* correspondent be correct in his views, it would pay. 'I,' for my part, he says, 'and I have heard others say the same, would often be glad to pay my guinea for a visit from a skilled horticulturist.' If the want of knowledge among gardeners is as great as this implies, women, by taking up the profession, could do no injury to the other sex; they could oust no one from his place, and would simply step into a void, filling up the gap between the shining lights of horticulture and botany and the obstinate jobbing gardener, who very often takes the name of one without any knowledge of the duties, but a great idea of the perquisites, of the situation."

THE FORGET-ME-NOT.

THERE is a little and a pretty flower,
That you may find in many a garden plot;
Yet wild it is, and grows amid the stour
Of public roads, as in close-wattled bower:
Its name in English is Forget-me-not.

Sweet was the fancy of those antique ages
That put a heart in every stirring leaf,
Writing deep morals upon Nature's pages,
Turning sweet flowers into deathless sages,
To calm our joy and sanctify our grief.

And gladly would I know the man or child;—
But no! it surely was a pensive girl
That gave so sweet a name to floweret wild,
A harmless innocent, and unbeguiled,
To whom a flower is precious as a pearl.

Fain would I know, and yet I can but guess,
How the blue floweret won a name so sweet.
Did some fond mother, bending down to bless
Her sailing son with last and fond caress,
Give the small plant to guard him through the fleet?

Did a kind maid, that thought her lover all
By which a maid would fain beloved be,
Leaning against a ruin'd abbey wall,
Make of the flower an am'rous coronal,
That still should breathe and whisper, "Think of me"?

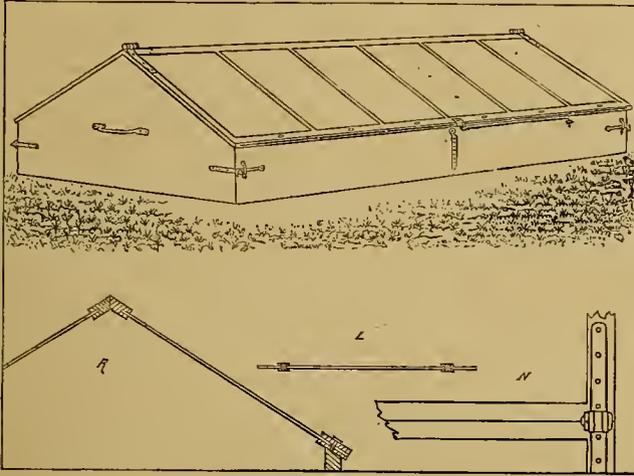
But were I good and holy as a saint,
Or hermit dweller in secluded grot,
If e'er the soul in hope and love were faint,
Then, like an antidote to mortal taint,
I'd give the pretty flower Forget-me-not.

Hartley Coleridge.

GARDEN STRUCTURES.

LLOYD'S GROUND VINERY.

AMONG the various ground vineries shown at Birmingham, one of the best was that shown by Mr. Lloyd of Grantham, of which we give a figure and details, from sketches by our special artist at the Birmingham show. Our engraving represents one fixed together six feet long. They are made from two to six feet wide, and when separated form eight parts. Two wrought iron tie girders, bent as in section fig. R, form the frame, to which are bolted two boarded sides; the loose wood ends, being grooved and tongued together, shut against the iron girders, and are secured by iron hook hasps at the corners. The roof is constructed with patent sashes having grooved bars, and the glass is slid into position, as shown in fig. L; the front edge has a moveable fillet, which, when screwed down, protects and secures



Lloyd's Ground Vinery.

the glass, and allows rain water to run off. Damages in the glass may readily be repaired without sending for a glazier. The sashes are hung with wrought iron rule joints, as shown in fig. N; they are bolted at the angle of the iron girders, and allow the sashes to be turned over and to rest upon each other; a hook and eye are provided to set the sashes at any angle for ventilation and convenience in glazing. These Vineries are easily fixed together or taken to pieces, and, when required, the lengths may be hooked together so as to form rows of twelve, eighteen feet, or more, and when packed for transit occupy a small space. These miniature structures are useful in garden operations for a variety of purposes, viz.:—For wintering Auriculas, Carnations, Primulas, Calceolarias, potted Strawberries, Cauliflowers, Lettuce, growing and hardening off bedding plants, raising delicate seeds, or for Cucumber growing, as well as that of Vines.

United Order of Free Gardeners.—The United Order of Free Gardeners, which seems of late to be making very rapid progress in Shrewsbury, is, says a correspondent, a friendly society, concerning which some little misconception prevails in certain quarters. Its name would lead to the supposition that it was a society formed for practical gardeners alone; but it only needs the slightest acquaintance with the Order and its principles to see that they are intended for universal application. The Order of Ancient Free Gardeners, which has at any rate the merit of antiquity, dating its origin so far back as the thirteenth century, was merged into the United Order of Free Gardeners a little over a quarter of a century ago. The title "Gardener" signifies that the Order originated among a few toilers of the craft, who banded together for their mutual benefit. The idea of unity was a good one. This brotherly feeling having sprung up among them the ties at length became stronger, and the brethren more numerous, until they formed themselves into lodges, and ultimately into a secret Order. They were governed by officers duly appointed, and a law of the society, which dates thirty years back, provided that any person who joined the society must be a practical gardener. Hence the notion which now prevails that it is intended for such persons alone. This law was, however, eventually cast aside, and persons of all ranks became eligible for admission.

GARDENING IN THE SOUTH OF IRELAND.

BY NOEL HUMPHREYS.

PASSING the noble belt of wood that skirts the domain of Mr. Townsend, of Derry, as that picturesque property is called, I was struck with the fine growth of some American Oaks and Spanish Chestnuts, and also with some fine Conifers, of species unusual in this part of the country; in fact, the whole belt of shrubs and trees I am alluding to looked so thriving and handsome, that, when I arrived at the lodge, I enquired if a stranger might be permitted to see the interior plantations and gardens. My request being acceded to, I at once entered. The lodge is a pretty modern structure, in the Swiss-Gothic style, as it is called, and it is covered with Fuchsias and climbing Roses, which make it quite a picture; but, after the fashion of this part of the country, no attempt has been made to surround the lodge with a pretty flower garden, as is almost invariably the case at the entrance of an English domain, of however small extent.

The Rhododendrons and Aucubas form conspicuous objects on either side of the drive, from their great size, and their luxuriant growth; but I did not observe any of the new varieties of the Aucuba, though the female plant, with its large red berries, would make such a fine object here in autumn and winter. The Rhododendrons were apparently all of the old ponticum breed, which is to be regretted, for doubtless all the tenderer kinds would do well. The view from the front of the house (which is of the old Irish manor-house type, rough cast and yellow-washed) is decidedly fine. It extends over the waters of Ross barbour, and the ocean beyond, and the foreground, formed by the grounds, is sufficiently good. But there are two or three trees requiring obliteration, in order to open up and improve the picture. They are not remarkable either for size or growth, but yet they would, as I learnt, be felled with much regret, and naturally so, as timber is the one thing most wanted about Irish country-houses and Irish scenery in general.

In front of the house is a small geometrical flower garden, not at all equal to the situation. It wants both length and breadth, but the young gardener, Mr. Clarke, whose father has the care of the noble collection of plants at Lakelands, near Cork, is doing his best to make the place attractive for the reception of the family, expected shortly from the Continent. Mr. Clarke has introduced a few features in the bedding system which may be worth attention, as, for instance, forming some of his masses of purple by means of the hardy Verbena, *V. venosa*, which will stand even English winters if not very severe, and make gay patches of bright colour early in summer, long before the tenderer species, which are always checked for a while by removal from their places of shelter in frame or greenhouse. As a dark edging, he makes use of the deep puce-leaved Waterloo Beet, which, being naturally dwarf, requires no pinching, pegging down, or trimming. The Geraniums did not appear to be doing so well as with us, but bedding Calceolarias, both yellow and brown, which have been a partial failure this season in England, were answering extremely well, and even growing luxuriantly here. If this front flower garden were considerably extended on both sides, and a portico and low terrace of suitable style added to the old-fashioned residence, the front of Derry House might be made remarkably beautiful, nature having already done so much. These improvements may, however, be already projected; among the many which I noticed in progress, new walks are planned throughout what we should call the park, but which is here termed the lawn—many Irish lawns extending to forty or fifty acres. Most of these improvements are in a more or less forward state; I am speaking of the "lawn" and shrubberies, and not of the handsome quadrangle of new stabling which is nearly completed.

I was next taken to a new vinery, which promises well, the young plants making way strongly, and a few old ones having been got into such good order since last year that they are showing remarkably fine crops; especially two Black Hamburgh plants and a Muscat of Alexandria. The vegetable garden is also being improved, and is a real conquest over rank, ragged, rocky nature; every inch of ground, as frequently happens in this mountainous part of the country, having to be torn from the dominion of the rocks. If one wanted a rockery, rich in Ferns and Stonecrops, creeping Hypericums and purple Heaths of every shade, nature has done it here ready to one's hand, without a single interfering touch of art being necessary; but Cabbages, Broccoli, Asparagus, French Beans, &c., require human aid against the tyranny of the rocks, and war has to be declared, backed by plenty of gunpowder for blasting purposes, before these stony-hearted enemies of Brassica oleracea and its congeners can be driven from their strongholds. When that is once done, however, a good garden is pretty nearly certain, for the *débris* forms a very prolific soil.

There is a detached walled flower garden among the woods here, which is quite a dainty retreat, snug and retired, and disturbed by no sound but the song of birds. A rustic bench under the trees

which droop over the north wall makes a charming "lovers' seat"—no doubt soft nothings have often been whispered there—and often will be again, and the tale told that, old as it is, and hackneyed, never loses its attraction—"the old, old story." In the centre of this pretty garden in the woods is a handsome new greenhouse, in which is quite a splendid show of plants. Among these I noticed the fine double scarlet *Geranium Victor*, and the giant-flowered single ones *Warrior* and *Leonidas*, some exquisitely grown specimens of the pretty variegated ivy-leaved *L'Élegante*, and a great hush of *Eugene Buengoch*, with its profuse masses of blush-toned flowers; while outside was a fine collection of *Gladioli* in full bloom. Altogether my morning visit to Mr. Townsend's place at Derry was a very agreeable one.

THE KITCHEN GARDEN.

AN ASPARAGUS-GROWING COMPANY.

THANKS to favourable conditions of soil and climate, as well as to careful cultivation, the country round Brunswick is acquiring a reputation for Asparagus which bids fair to rival that of Argenteuil in France. Whilst a few years ago the production of that wholesome and much-esteemed vegetable was confined to market-gardeners and men of some means, and the quantity raised merely sufficed to satisfy the wants of the neighbouring town, the area now devoted to its growth is several hundreds of acres in extent, and so great is the demand for it—both in the fresh and preserved state—in the populous centres of Northern Germany, that its cultivation is largely engaging the farmers and even landed proprietors. With the threefold object of increasing the production, keeping up the price and reputation of Brunswick Asparagus, by regulating the supply and placing growers in a more independent position with the different classes of purchasers, greengrocers, provision merchants, &c., some of the principal cultivators formed themselves in 1869 into an Asparagus-growing company, and, as the movement has been attended with highly satisfactory results, it may not be uninteresting to glance at a few of its more characteristic features.

CONDITIONS.

The capital of the company is fixed provisionally at 3000 thalers (£450), to be raised by the issue of shares of 25 thalers (£3 15s.) each. By a vote of the majority at a general meeting it may be increased to 20,000 thalers (£3,000). Only those persons are entitled to become shareholders and members of the association who live within a certain radius of the town of Brunswick, and have in their occupation land suited for raising the best quality of Asparagus. Applications respecting membership must be addressed to the council or board of directors. The latter decides as well on the claims of candidates for admission as on the price at which, on the death of a shareholder, his shares shall be bought in by the company or transferred to another applicant. For each share a member possesses he is under the obligation to deliver during the season, at the company's stores, 150 lbs. of Asparagus grown by himself. He must deliver up to the 18th of May 28 lbs. a week, and after that day 25 lbs. The board is, however, empowered to modify these conditions whenever circumstances may render it desirable. Two-thirds of the Asparagus delivered must be of the best quality, the managing director to decide whether the goods come up to the required standard. Should his decision be called in question by a shareholder, the latter has the right of appeal to the board. The price which members are to be paid for their produce depends upon the favourableness or unfavourableness of the season, and other circumstances, and is fixed periodically by the board. It is the board, also, which decides what shall be the selling price of the vegetable. Any member not fulfilling his obligations towards the company respecting the quality or quantity of the Asparagus, or the time of delivery, is fined three groschen (3½d.) for every pound rejected or deficient, and must submit besides to a proportional diminution of his share of the annual profits. The board is authorised to purchase Asparagus from non-members, provided their goods are equal in quality to what is supplied by members, and not paid for at a higher price. When, however, no advantage is gained by dealing with "outsiders," and the demand can be satisfied by members of the association, the preference must always be given to the latter. As fast as the deliveries take place, they are of course entered in the company's books in the names of the respective growers, and a settlement takes place at the close of each week. The financial year extends from the 1st of January of one year to the 31st January of the next, and during eight days the annual balance-sheet lies open for the inspection of shareholders. What dividend shall be declared, or how the profits are to be applied, is decided at the general meeting convened to receive the yearly

statements. The director and staff are placed under the control of the council or managing board appointed by the shareholders. The members of this board, who are entrusted, of course, with the arrangement of all important details connected with the working and organization of the undertaking, receive no remuneration for their services.

COST AND YIELD.

With regard to the yield per acre of Asparagus, it varies with the soil, climate, situation, mode of culture, &c., from 300 lbs., or, in unfavourable years, still less, up to 1250 lbs. According to its quality, the produce is divided into prima, secunda, and "soup" Asparagus, the first being worth, on an average, 1s. to 1s. 2d., the second 6d. to 8½d. and the third 3d. to 4d. per lb. Last year—considered rather a poor one for growers—the company sold 40,000 lbs. of prime quality, the produce of 125 acres, at 1s. per lb. It thus realised, without taking secunda and soup Asparagus into account, over £16 per acre. According to Mr. Struck, the company's manager, the expenditure (wages, manure bills, &c.), connected with the preparation of land for Asparagus culture, together with the rent and sum put aside as a reserve fund, represent a capital, or first outlay, of £50 to £70 per acre. The reserve fund is intended to cover the loss otherwise entailed on the grower by the non-productiveness of the soil during the first three years, and by its probable exhaustion or unfitness for further cropping with Asparagus, on a large scale, at the end of ten years. Although the first outlay in raising Asparagus is somewhat considerable, the cost of cultivation, &c., per acre, if the average of several years be taken, does not, it is estimated, exceed £25; and, as the gross return amounts to between £35 and £50, in exceptionally favourable years reaching even to £120, the margin for profit is sufficiently ample. Thanks to direct railway communication and a well-organized system of transit, Asparagus gathered in the neighbourhood of Brunswick at sunrise can be delivered in Hamburg, Bremen, Hanover, Magdeburg, and Leipzig in time for early dinner. The price of the vegetable in Berlin and other places formerly fluctuated very much, and was liable, owing to the rapid growth of the crop in favourable weather and the consequent overstocking of the market, to great and sudden depression. The supply is, however, now better regulated. That portion of the produce intended to be sent off in a fresh state must, according to the company's rules, be six inches to seven inches in length, white, and, of course, newly gathered, and free from all damage. It is packed in baskets specially made for the purpose, and which are mostly large enough to hold 100 lbs. The Asparagus not destined for immediate consumption is preserved in tins, for use when fresh Asparagus is not to be had.

SOIL AND PLANTING.

As to the soil considered most favourable for Asparagus culture, a deep and tolerably retentive sandy loam is the one preferred. Neither too great moisture, nor on the other hand over-dryness, suits the plant. Land well adapted for its growth commands a rent of £5 to £7 per acre. The first operation—and it is performed in the autumn—is to mark out the ground into beds 2½ feet to 3 feet wide, and then to cover the latter with soil taken from the intervening alleys. When the beds have been raked smooth, the next step is to put on them a good dressing of moderately well-rotted stable manure, and to spread some of the rich soil over the dung. Upon beds so formed it is usual with some growers to pour liquid manure. Land of a stiffer, naturally more tenacious character can only be rendered fit for Asparagus culture by an admixture with lighter soil, and the cultivator has then to proceed quite differently in the preparation of his beds. It is, however, only in gardens that the vegetable is grown on heavy land, and we are here concerned only with its culture as a field crop. The season for planting is the spring, and it is usual to put in the young plants in two rows, 1½ foot to 2 feet apart in the row. The roots of the plant are carefully spread over the soil, which has been placed ready in little heaps, and they are then covered in with well-manured earth, taken from a basket at the planter's side. As soon as the planting is completed, some more rich soil is put on the beds, until it forms a layer above the roots of about 2 inches to 3 inches deep. Although Asparagus is an indigenous plant, and grows wild on the sandy shores of the sea and in other favourable localities in different parts of Europe, when raised on a large scale it is only by means of careful, laborious cultivation that continuous good crops of the vegetable can be obtained. Much depends, of course, on the seed and on the judicious selection of the young plants, and, knowing this, the Brunswick cultivator raises his supply of plants from seed of his own growing. He chooses for sowing medium-sized grains taken from the thicker, tenderer (more delicate) specimens which are not overlaid with seed, and for the plantation he confines himself to vigorous well-rooted plants. As soon as the young plants have reached such a size as to render them liable, if unsupported, to be broken or bent in windy weather, a small stake is set and attached to

each stem. Care is taken to keep the soil in the spaces between the plants light and free from weeds, and, should the season prove an excessively dry one, it is considered advisable to water the crop. Some growers, with a view to turn the intermediate ground to account, raise on it a crop of Beans, Cabbage, or Kohl rabi. Others condemn this practice because it lessens the productive powers of the soil, and thus has a prejudicial effect on the Asparagus. In the autumn, the dry stalks having been cut off about 2 or 2½ inches above the ground, a 2½ or 3-inch layer of good earth, and often a coat of stable manure, is put on the beds. Should a dressing of manure be applied, the strawy portion of it needs to be removed in the spring, when the ground is dug up. As to the succeeding operations, they are a repetition of those of the previous year. Respecting the application of the manure, as a rule, when the grower can command a sufficient quantity to allow of it, he puts on a dressing of stable dung, liquid manure, or some artificial fertilising material every year. When, on the other hand, the supply is somewhat limited, a dressing is only given every second or third year. Of the different artificial fertilisers, guano, superphosphate of lime, and salts of potash, applied either separately or as a mixture, are amongst the most generally employed. Some cultivators are said to have obtained highly favourable results from a combination of guano, nitrate of potash, and salt. In lieu of stable dung it is not uncommon to spread the haulm or dry stalks of the Asparagus on the ground, to add a layer of earth, and then pour liquid manure over both. Two other natural manures, which experience has shown to act most beneficially on the crop, are pigeon dung and poultry droppings. A dressing half an inch thick is applied at the end of February or beginning of March, and afterwards buried evenly. As regards the gathering of the crop, although the more general and approved practice is to defer it until the third year after planting, there are growers who begin cutting as early as the second. They cannot, however, with safety continue to gather longer than a fortnight, and require to be most cautious not to weaken the plants. When the beds are in full productiveness, May is regarded as the chief harvest month; the gathering continues, however, until about Midsummer-day. In cutting the heads, or rather, gathering them with the fingers, the grower has to exercise great care not to injure the subterranean stock. He frequently makes use of a specially constructed knife to clear away the soil from the stems.

ASPARAGUS PESTS.

Foremost amongst the causes which tend to diminish the yield of Asparagus in the neighbourhood of Brunswick deserve mention the luxuriant growth of fungus on the part of the plant above ground, the attacks of caterpillars on its roots, and the depredations of a certain beetle, *Lema* (*Chrysomela*) *Asparagi*, L. Of these the most serious evil is the parasitic fungus. With regard to the beetle alluded to, it is not so much the insect in its perfect form which proves so destructive, as the larvæ. The beetle, after eating into the vegetable, lays its eggs in the tender, juicy portion of the stalk and leaves, and when the larvæ (the produce of the eggs) issue forth, they totally destroy those parts of the plant with which they come in contact. The most efficient plan of dealing with the insect-plague is to collect and "stamp out" the young brood, or better still, the full-grown beetles, before they have laid their eggs. The work of collection must, however, be carefully proceeded with, for with the slightest movement the beetles will fall down and conceal themselves in the earth. After a time they reappear, and, if permitted, will crawl again on to the plant, lay their eggs, and recommence feeding. In his war of extermination with the beetles, the Asparagus-grower has no better friends and allies than the birds. If he is wise, he does all in his power to attract and protect them. Respecting the fungus, the first symptoms are observable in August. Small dark brown spots, which in a few days attain the length of a quarter to half a centimetre, appear on the stalks, and gradually assume a much darker shade. These spots are surrounded by the ruptured epidermis of the stalk, and are somewhat inflated. On close examination, vertical layers of small powdery spots are remarked under the epidermis: and it is their great accumulation here and there which causes the latter to burst.

The injury done to the parts of the vegetable that are above the ground has an unfavourable effect on the roots, checking their development, and in the ensuing spring the yield of Asparagus will be found materially diminished by the premature death of many of the plants. As to the precise nature and proper designation of the disease, whether rust or another disease greatly resembling it, whether originating in (or greatly increased by) over manuring with nitrogenous fertilisers, and whether—as some maintain—never met with under the shade of trees, these are questions on which some uncertainty prevails, and at the solicitation of the Brunswick Central Agricultural Association, Dr. Kuhn, of Halle, and Dr. Birnbaum, of Cleve, are now directing their attention to them. Should it be

ascertained on further investigation that the disease is not confined to Asparagus—and Dr. Birnbaum has noticed parasitic fungus almost identical in appearance on Couch Grass—the difficulty of combating the evil and preventing it from spreading will be proportionately increased. If it turns out to be rust, the spores alluded to are possibly the *Teleute*, or winter spores, which first develop themselves in spring on another plant, and are afterwards found on Asparagus in the form of mycelium or spawn. On one point, viz., the dangerous character of the disease, there is unfortunately no room for doubt, and the grower has every reason to be careful that it shall not gain ground, or be imported into districts hitherto free from it. Above all things he must endeavour to prevent the discharge of the spores—the organs of reproduction—and, as soon as any signs of disease show themselves, his best course is to remove the parts attacked and burn them.—*Field.*

LAXTON'S NEW PEAS.

THERE has been this season a great trial of Peas, by the Fruit and Vegetable Committee, in the new grounds of the Royal Horticultural Society at Chiswick. In all respects this trial has been most successful and satisfactory. Unfavourable as the season has been for most tender crops, in consequence of so much dripping wet, it has proved extremely favourable for Peas, which have seldom or never been seen under more favourable circumstances. These trials may, therefore, be looked upon as conclusive.

The indefatigable Laxton, the great Pea-maker of the day, has been reaping golden honours, having received no less than eight first-class certificates for his introductions, all of which are undoubted acquisitions in their respective classes. We have him to the front with the earliest, the latest, and the largest; and in the respective classes to which they belong, the several varieties are quite equal in flavour, if not superior, to any of the older sorts. If to these we were to add those of previous years, viz., Alpha, Supreme, Quantity, and Quality, as well as Prolific Long-pod, all established favourites, we should make out a list of Laxton's Peas more than sufficient for the largest supply.

LAXTON'S WILLIAM I.—Early green Marrow. Pods long, curved, rounded, well-filled, of a deep green colour, containing from seven to nine fair-sized deep green Peas. Very handsome in appearance, but deficient in flavour, like all others of this class. Plant vigorous, 4½ feet to 5 feet high, having the habit of the frame class more than that of Prize-taker, to which it properly belongs, producing the pods generally single, but frequently in pairs. Dried seed round, slightly indented, light green and white, mixed. This comes into use about six days after Dillistone's Early. A very excellent and first-class Pea.

LAXTON'S SUPERLATIVE.—Second-early Marrow. A cross raised between *Ne Plus Ultra* and a hybrid of *Supreme*. Pods very large, about eight inches long, slightly curved, rounded in form, and bulged out at the sides, sometimes flattened and irregular, containing from eight to ten large deep green peas, but not sufficiently large to fill the enormously large pods; flavour indifferent. Plant very robust, from seven feet to eight feet high, producing numerous pods, mostly in pairs. Dried seed light blue, parti-coloured, flattish. This comes into use fourteen days after Dillistone's. A very handsome Pea for exhibition purposes, having the largest pod of any Pea in cultivation.

LAXTON'S SUPPLANTER.—Second-early. A cross between *Veitch's Perfection* and *Little Gem*. Pods very large and broad, somewhat irregular and slightly curved, sickle-pointed, of a deep green colour, and containing from seven to nine very large Peas of a fine green colour. Plant robust, branching, about three feet in height, with large deep green foliage, producing its pods in pairs. Dried seed light blue, flat, round, like the *Imperials*. This comes into use about three weeks after Dillistone's Early. A very handsome and prolific Pea; a great improvement on *Scimitar*.

LAXTON'S FILLBASKET.—Second-early Blue. A cross between Laxton's *Standard* and *Supreme*. Pods very long, curved, round, closely filled, of a bright green colour, containing from eight to ten very large deep green Peas. Plant robust, branching, about three feet in height, producing its pods generally in pairs. Dried seed round, blue. This comes into use about fifteen days after Dillistone's Early. A very prolific and very handsome Pea.

LAXTON'S OMEGA.—Late green wrinkled Marrow. A cross between *Ne Plus Ultra* and *Veitch's Perfection*. Pods long, nearly straight, round, very closely filled, showing the Peas in the pod up to both ends, of a very deep green colour, containing from eight to ten very large Peas of a deep green colour, very sweet and excellent; inside of the pods deep green, like *Ne Plus Ultra*. Plant robust, about 2½ feet high, branching; foliage deep dark green, producing from twenty to twenty-four pods, in pairs. Dried seed deep green, wrinkled. This comes into use a day or two after *Ne Plus Ultra*, and a few

days before Veitch's Perfection, but remains green, sweet, tender, and good, several days later than either. A good name for this would have been Dwarf Ne Plus Ultra. A first-class dwarf green wrinkled Pea of the highest quality.

LAXTON'S UNIQUE.—Early dwarf green Marrow. A cross between Laxton's Prolific and Little Gem. Pods long, broad, slightly curved, scimitar-shaped, of a deep green colour, containing from seven to eight fair-sized peas. Plant having the habit of Tom Thumb, robust, about eighteen inches or two feet in height, producing from eight to ten pods in pairs. Dried seed parti-coloured, blue and white. Comes into use seven days after Dillistone's Early and two days after Tom Thumb. A very excellent early dwarf blue Pea.

LAXTON'S DR. HOGG.—Early green wrinkled Marrow. A cross between Prolific Long-pod and Little Gem. Pods very handsome, long, much curved, round, of a bright green colour, very closely filled, containing in each from eight to ten deep green peas of excellent quality. Plant rather straggling, about four feet in height, having the habit of the frame class, producing from ten to twelve pods, frequently in pairs, but sometimes singly. Comes into use eight days after Dillistone's Early. Dried seed deep green, wrinkled. A very handsome Pea, prolific, and of good quality; the earliest of the deep green wrinkled Marrows.

LAXTON'S HARBINGER.—Early round Blue. A cross between Alpha and Ringleader. Pods smallish, round, tightly filled, in appearance very much like those of Ringleader and Invicta, containing from six to eight peas of fair size, and of fine colour. The plant has the habit and character of Ringleader, and is about three feet in height, producing from seven to eight pods singly on the stem. Dried seed pale blue, like Invicta. Comes into use three days before Dillistone's Early and Ringleader, and six days before Invicta. The very earliest Pea in cultivation.—A. F. B., in "Florist and Pomologist."

ECONOMICAL MUSHROOM CULTURE.

ALTHOUGH Mushroom culture is well known, and has been often well described, there are some things still to be said, and those more especially in the direction of economical culture. Any person who can procure stable dung, good loam, good spawn, prepares them properly, and has a snug warm spot to make the bed in, can grow Mushrooms; but there are those who have not these conveniences, and yet Mushrooms may be grown, and that too at a small outlay of either trouble or expense. The great and indispensable desideratum is fermenting material of a kind that will retain a gentle heat for a very lengthened period, and for that purpose some materials may be used which have not recently been named—if at all. First among these may be mentioned sawdust which has been used for bedding horses, or for riding-school tracks. Such a substance, thoroughly impregnated with urine, and mixed with horse droppings, forms an excellent material for Mushroom beds, especially if mixed with one-fourth of good fibrous loam. These mixed and fermented together, and thrown into a bed a foot to eighteen inches in thickness, according to the temperature of the shed in which the bed is made, will be found to form capital material for growing Mushrooms, especially as it retains the heat for a long time. The worst of it is that the material is almost valueless after it has served the first purpose; and used as dung upon light land is rather injurious than otherwise. Then you may use leaves and loam in the proportion of one part of the latter in a turfy state to four or five of fermenting leaves. These may be recently gathered from the trees, and should be allowed to attain a brisk heat before the loam is added, and then, after sweating for a week or ten days, may be turned, mixing the materials thoroughly together, after which they may be formed into a bed.

A Mushroom bed of this kind should not be less than fifteen inches in thickness when thoroughly consolidated, and, so managed, it will grow Mushrooms just as well as dung. Droppings from our streets and cattle markets, especially if paved and much frequented by horses, or from cab stands, &c., if collected when dry and fermented a little, yield capital material for beds. From the cattle market we have the dung of horses, sheep, and cows mixed together in a finely divided state, the heating of which is gentle and regular. Material of this kind procured on dry days from the sanitary authorities thrown together to ferment a time or two, and then made into well consolidated beds, will produce Mushrooms of the finest quality, and continue in bearing a long time. It is of the first importance that this material be collected in a dry state, as the slush of our streets would not do at all. Equal proportions of street sweepings from those parts of towns most frequented by horses, and fresh leaves properly fermented and mixed with loam, would make perhaps as good material for the growth of Mushrooms as need be obtained. The beds, properly made and consolidated, must, if the heat be too violent, be immediately pierced with holes by a broad, blunt stick,

say a foot apart, so as to let the superfluous heat escape, and when it has done so fill up the holes again and spawn the beds. The temperature of the dung or bed at the time of spawning should not exceed 80°, indeed 75° to 80° is the proper temperature. At the time of spawning it is a very good plan to cool the beds with an inch or so of good loam, thoroughly beaten down. This is preferable to waiting until the spawn begins to spread, as at that time the check of the cold soil will throw it back for a considerable period, if not destroy its vegetative powers altogether. The right time for the final earthing of the beds is when the spawn is nicely spreading, which may be told by the white filmy appearance of the surface. The soil, if possible, should be warm at the time of using, and it will at the same time be well to cover the beds with a dry mat or two, until the surface soil attains the proper temperature.

Twelve months ago I made a Mushroom bed upon a viney floor, the dung being very roughly prepared and not very dry at the time of its formation. However, it was formed and allowed to heat, and then a coat three inches thick of strong loam from a Melon frame was forked in and made solid, and a few days afterwards the bed was spawned. I never had Mushrooms do better; they were large in size and very fleshy, and the beds continued in bearing until June. Upon the continuous bearing qualities of a Mushroom bed a word may be said. It may savour of the ridiculous to say that a plant growing upon a dung bed may fail from the want of manure. Yet such is literally and positively a fact. When beds become worn out, and the produce small and spindly, some persons directly do away with them and make fresh ones. Instead of doing this, give the bed a thorough soaking of stable urine and water at the temperature of 80°, using the urine in the proportion of one part to five of soft water, and adding a wine-glassful of salt to each quantity, then coat the bed with fresh soil, cover it with mats, so as to promote the heating, and a second crop as good as the first may be obtained. In this matter I speak from experience, and Mr. Ingram, at Belvoir, has followed the same plan for many years with the most satisfactory result. Mushrooms when in a growing state require greater supplies of water than most cultivators allow, and the produce will be much improved thereby. For the purpose of growing Mushrooms of the finest quality it will be well to cover the beds with double mats, the under one of which may be sprinkled morning and evening with tepid water, and then be covered with the dry mat. This maintains a proper growing temperature around the young plants, in consequence of which they come up juicy, and particularly rich in flavour. Mushrooms may be grown almost anywhere if the proper temperature of the bed can only be maintained; consequently the material of the bed must be such as will maintain a slow process of fermentation for a long time, and that attained, success in the cultivation of them is certain. A.

NOTES AND QUESTIONS ON THE KITCHEN GARDEN.

New Early Potato.—We beg to send you a sample of a new seedling *Potato*, to be sent out by us next season, under the name of Robson's Challenge. It comes in ten days earlier than Myatt's Kidney planted on the same day. For an early kind it is a wonderful cropper, producing as heavily as any main cropping sort, and is altogether the best early round *Potato* we have seen.—PETER LAWSON & SONS. [Your seedling is a handsome round white *Potato*, which, on being cooked, was found to be beautifully white and of extra fine flavour and quality.]

Ducks in the Garden.—No more valuable help can be procured in the garden, to disturb and destroy insects, than a brood of young ducks. They devour immense quantities of slugs and other injurious pests, and in their continual ranging disturb what they do not destroy. They injure none of the vegetables, unless it may be young cabbage plants.

The Potato Disease.—This is very bad in Suffolk. It showed itself about the 1st of August, and is running in all directions on its errand of destruction with lightning-like speed. There are only two consolatory facts regarding it, viz., that many early *Potatoes* were consumed before it came, and that probably some late ones will escape uninjured.—D. T. FISHER.

Gishurst Compound.—Do your readers know that this compound stimulates plant growth as well as destroys insects? Some of my Lettices and Cabbages being attacked by insect pests, &c., I watered them well with it, and the immediate luxuriant growth was so striking, and so distinctly confined to the watered plants, that I could not but believe that the compound was the cause—I should like to know if any one else has observed this.—E. A. O.

Substitute for Potatoes.—Beet and Mangold Wurtzel would make nutritive and by no means unpalatable substitutes for the *Potato*. If these roots are boiled when the outer skin has been injured, a great portion of the most nutritious part—viz., the sugar, escapes, and the result is a tasteless, stringy vegetable; but if, instead of boiling, the roots are washed and well baked, then peeled and eaten with vinegar, they are very palatable, anti-scorbutic, and, what is a great advantage, will keep good for several days after they are cooked.—E. M. WRENCH, F.R.C.S., Exam., &c., Park Lodge, Burslow, Dorsetshire.

How to Grow Radishes.—In a late issue, one of your correspondents states that he is anxious to know how to grow Radishes with success. I have always found the following simple plan most successful: break up an old Cucumber bed and dig this in where Radishes are intended to be grown, rake over nice and smooth, then sow the seed broadcast, and sift over the bed some good garden soil, after this, pass a light wooden roller over the whole. When the plants are up, water until they are ready for use, only when the sun is shining. They will grow space, and when eaten will be found beautifully crisp and mild, and entirely free from stringy matter. Gather them when young.—T. S. JERROLD.

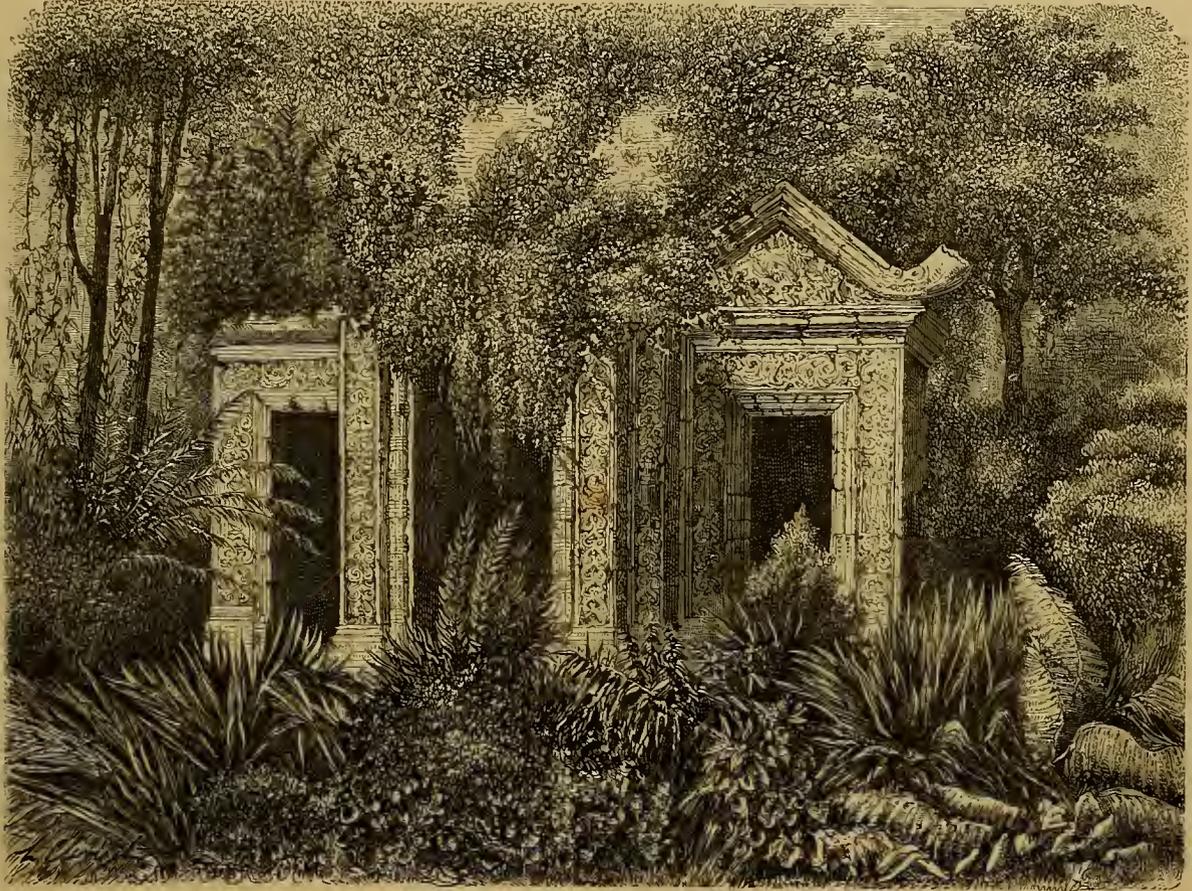
THE TRIUMPH OF VEGETATION.

"Naturam expellas furcâ, tamen usque recurret."—Horace.

WERE the surface of the earth left entirely to itself, we have little doubt that not many years would elapse ere it would present an almost uniform aspect of green, relieved only by the restless changes of the sunlit or the sullen sea. At least it would be so in all but those desert regions where drought forbids plant life. Remove man from the scene, and the ever-invading and space-appropriating forces of the vegetable kingdom, no longer checked, would quickly advance and take possession of every spot of ground from which they are now excluded by man and his works. The weeds which spring up so rapidly in our gravel walks, the grass which so soon hides the pavement of the unused court-yard, and the moss and Ivy which hasten to cover wall and roof and rock

cluding Palms, which clamber over their ruined roofs and walls. Man came in his might and built temples which are wonders even to the engineers and architects of our own day. The poor plants were not among the enemies he thought of; but they came back to hasten the mortar into dust. However, they garland the grave of a race with living immortelles, and make the scene more beautiful than it was before. Where once arose a level forest of tropical vegetation, we now see it spring from ground and wall and high cupola, and some of the aspects of vegetation among the mysterious ruins of this country are among the most strange and beautiful that are known.

A parallel case is that of the ruined cities which not many years since were discovered in the forests of Central America, completely overgrown and hidden by trees and shrubs. Of



The Triumph of Vegetation.

and tree, all attest the unceasing efforts of Nature to re-occupy her old domain. And this not merely in our moist and temperate climes. In tropical regions the silent sleepless struggle is maintained with equal tenacity of purpose, a more vigorous warfare, and more speedy conquests. Our engraving represents the ruined Buddhist shrine of Wat Phou, in Indo-China, environed and besieged by the hosts of the rampant foe. As yet have they only reached the threshold and climbed upon the broken roof, but, slowly yet surely, the time will come when roof and wall shall be prostrated by the sturdy climbers and form a rubbish-heap on which the descendants of the Dracænas, Ferns, Cycads, and other plants which now swarm in the foreground, shall establish themselves in triumph, and live and reign in undisputed possession. In the same country there are many wonderful old temples, some of them of vast size, which are gardens, from the number and profusion of the plants, in-

the race of men who built them no trace remains to us, and they probably passed away from the earth long before our history commenced; but the carvings on the fragments of stone which have been disinterred from the mounds of ruins prove that they possessed no contemptible knowledge of the arts which belong to civilized life. Everything relating to them has vanished, save these relics of their dwellings, and the once busy scene of their life is now buried in the deep silence and impressive solitude of the forest, whose towering trees have usurped the place of all that once belonged to them, and now stand victors over their ashes.

A FEARFUL fire, says the *Levant Times*, has taken place at Rodos, which has completely destroyed the forests on the island of Simi. The conflagration, which appears to have rivalled in extent the prairie fires of America, reached from Boudroum to Marmora, a distance of 70 miles.

THE ARBORETUM.

THE NEW FOREST.

A FOREST officer has lately contributed to the *Times* some sensible remarks on this and similar lands: "I think it desirable," he says "that it should be borne in mind that when we talk of the forest as 'belonging to the Crown,' 'the rights of the Crown' therein, &c., we really mean by 'the Crown' the State or the Government, for, *de facto*, the property is as much public as if it had been formally transferred *in perpetuo* instead of from reign to reign. I consider the idea that the New Forest is Crown property, or that the Sovereign has personal rights in it, erroneous, and likely to lead to false impressions, as, indeed, it has done, and that the whole question must be considered as one between the public or the State, as represented by the Government and their servants, and the privileged few who have certain rights in the forest and who are styled 'commoners.' Any other view, is, I consider, mischievous, as it would represent the interests of the Crown as antagonistic to those of the State, whereas they are identical. In fact, I would ask all interested in the subject to bear in mind what is, indeed, generally known, but not always thought of—viz., that the 'Crown lands' are so merely nominally, and that the New Forest is to all intents and purposes public property. I would also call attention to the fact that up to the present time the commoners have got the best of it in every readjustment or attempt at settlement of the forest, notably under the arrangement provided for by the Deer Removal Act, in 1851, in which case 'the deer have been removed, and each commoner's right investigated and entered in a register, but the Crown is not yet in possession of even the immediate compensation secured to it by the Act, for it has only enclosed one-half out of the 10,000 acres.' In fact, the commoners have so managed as to engender and keep alive a belief that their cause is identical with the popular one, while, in my opinion—and I have had some years' experience, and studied the subject both in India and the Continent of Europe—it is exactly the reverse. I submit that commoners are the natural enemies of all such public property, and that it is expedient to buy them out or commute their rights and servitudes at any price. Such has been done in Saxony thirty years ago, and both the State and those who had rights are convinced that it has proved a most advantageous step for both parties concerned, although at the time both were dissatisfied. The re-arrangement would be best effected by the appointment of a mixed Commission to value all such rights of which a complete register already exists, and submit definite proposals for buying them up, which might, after due consideration in Parliament, be embodied in a Bill and carried into effect. Then, and not till then, the New Forest might be dealt with as a purely national property, and administered to the best advantage by responsible officers subject to Parliamentary control.

I can see no reason why we should not then make of these 109 square miles, now lying more or less unproductive, a State forest of great value, managed on principles of scientific forestry, and at the same time forming a recreation ground for the people, free to all without let or hindrance, save in the case of young plantations where much damage might be done by the admission of men or cattle. I am not sure that even these need be enclosed if a proper act were passed authorising the punishment of trespassers and pounding of cattle found within the prescribed limits, and if the whole subject of a national forest conservancy, its uses and advantages, were made generally known to and understood by all classes. I maintain, further, that the proper management of a forest to the best advantage as a timber-producing area is scarcely, if at all, antagonistic to its retention as a picturesque and agreeable recreation ground, and that by judicious management we may secure the threefold advantage of—1. A considerable surplus revenue, derived without damage to the capital or stock of wood in the forest. 2. A large supply of timber for building purposes and firewood. 3. The preservation of an extensive area as a national recreation ground and the grazing of cattle under certain restrictions, and, if necessary, on payment of a small fee per head. On the first point there can be no reasonable doubt that, if the whole or greater part of the area were considered as available for planting and treatment as a forest, a very large annual income would before many years accrue to the State. Even as it is, with only some 25,000 acres under wood, the great proportion of which consists either of very young plantations or tracts containing only very old and scattered trees, there was a net balance of upwards of £4,000 for the year 1870-71, and I have no hesitation in asserting that this amount might be increased tenfold before the close of the century, while the value, beauty, and usefulness of the forest would have increased in equal, if not still greater, ratio. Nay, I have little doubt that much of the 30,000 acres classed as 'barren heath and moorland, utterly

unproductive,' might and would be gradually reclaimed and covered with timber if matters were put on a more definite and satisfactory footing, and the forest officers allowed to do the best they could for the State property under their charge, and not tied down to planting a comparatively small area, for which it is natural they select tracts presenting the fewest natural difficulties. On the second point I would remind your readers that the supply of timber from abroad is not inexhaustible, and that even now we hear ominous rumours of its becoming scarce in accessible localities in Norway and Canada, while I can vouch for the difficulty of keeping up the supply of teak from India and Burmah. Again, looking to the existing price of coal, and the probability that it will each year become dearer and scarcer, it appears worthy of consideration whether the practice of burning wood might not partially be re-introduced, and with this object the rearing of plantations of quick-growing trees, and encouraging the growth of Beech under Oak (which is universal in Germany), become a matter of paramount importance. England may be said to be the only European nation which has no State forests, properly so called, and I cannot help thinking that it is high time that she followed the example of other nations even in a tentative manner, and we have in the New Forest an excellent field for a commencement. Turning to the third point, I admit that the natural result of the introduction and carrying out of a system of scientific forestry is to convert many sunny glades and open pastures into 'dense Fir plantations,' and to substitute useful but unpicturesque stems 'drawn-up' to 40 or 50 feet without a branch, in place of the garbled Oak or the spreading Beech; but I think the general effect of this is exaggerated, and that even without special endeavour to preserve and set aside portions of the forest as open or park land, to be managed, as is the case in Windsor Park, only for the sake of the picturesque (and this could easily be done if thought expedient), there would still remain ample field for the lover of the beautiful and the natural in the varied and ever-changing forest itself, containing timber trees of various descriptions and of all ages, self-sown or planted, some ripe for the axe, some only just emerged from the nursery, and some patriarchs left towering alone to reproduce their species after all their contemporaries had been cleared away and converted to useful purposes. To any who doubt this I would say, go to Hanover and visit the Communal Forest of Eilenried, in close proximity to the town, and forming at one and the same time a most valuable property and a most lovely and picturesque recreation-ground; or let them proceed to the far-famed Wiener Wald, a State forest of 60,000 acres close to Vienna, and watch the pleasure-loving populace of that gay capital streaming forth every Sunday and holiday to ramble in the Beech woods and admire the beauties of nature, and I think all will readily admit that it is possible to retain the beautiful and picturesque along with the most useful and profitable.

NOTES AND QUESTIONS ON TREES AND SHRUBS.

Hydrangea paniculata grandiflora.—This is a good companion to the Oak-leaved *Hydrangea* lately mentioned in our notes. In colour of flower it resembles that kind, but it is quite distinct in habit. Free-flowering specimens of it may now be seen in some of the metropolitan nurseries.

Cupressus Lawsoniana alba pendula.—This new conifer is now in beautiful condition in the Cheshunt Nurseries. The present seems the season in which its silvery hues are brightest, just as the golden colour of *Thuja aurea* is most effective in April.

Acacia Hedges.—People who cannot get white thorn to grow as hedges in dry arid soils, where one often sees the most miserable of stunted moss-covered fences, should plant the common *Acacia*: it will thrive in such soils, and quickly form a strong fence. In very moist situations, in which the thorn is equally a stranger, good fences may be made by planting Willows, and, if good sorts are selected, the hedge becomes a source of profit.

Large Trees.—On the estate of the Count de Dree, in Côte-d'or, are two Plane-trees of remarkable size. The trunk of one of them, close to the ground, measures more than 27½ feet in circumference, while at a height of 6½ feet from the ground it has a girth of over 16½ feet. The other is of still greater dimensions, its trunk measuring over 29 feet in circumference close to the ground, with a girth of nearly 18 feet at a distance of 6½ feet from the ground. The diameter of the area covered by one of these trees is 162½ feet. There are many other large trees on this property—among them some specimens of *Populus fastigiata*, with stems from 9 feet to 13 feet in circumference, and a *Juglans nigra*, the stem of which at a height of 6½ feet from the ground has a girth of 7½ feet.—*Revue Horticole*.

AYRTON *v.* HOOKER.

As one of your contemporaries has been indulging in some little attempt at epigram on this subject, perhaps you will kindly allow me to follow suit with a tiny bantering:—

"If Kew's Director would resign
All work as boiler-overlooker,
And 'hook it' to his proper line
He'd act like a 'judicious Hooker.'"

T.

THE HOUSEHOLD.

THE HORSE MUSHROOM.

(AGARICUS ARVENENSIS.)

THIS species is very nearly allied to the Meadow Mushroom, and frequently grows with it, but it is coarser, and has not the delicious flavour. It is usually much larger, often attaining enormous dimensions, and turning a brownish yellow as soon as broken or bruised. The top in good specimens is smooth, and snowy white; the gills are not the pure pink of the Meadow mushroom, but of a pale brownish-white, ultimately becoming brown-black. It has a big, ragged floccose ring, and the pithy stem is inclined to be hollow. It is the species exposed for sale in Covent Garden Market. Indeed, after knowing the market for many years, I have rarely seen any other species there; when the true Mushroom, however, is there, it is frequently mingled with the Horse Mushroom, which seems to show that the dealers do not know one from the other. In the wet days of autumn, poor people go a few miles from town into the meadows to gather whatever they can find in the Mushroom line; they then bring their dirty stock to market, where it is sold to fashionable purchasers, stale, ravid, and without taste—unless it be a bad one. When young and fresh, the Horse Mushroom is a most desirable addition to the bill of fare: it yields an abundant gravy, and the flesh is firm and delicious. It is a valuable plant when freshly gathered, but when stale it becomes tough and leathery, and without aroma or juice. There is a curious, large, brown, hairy variety, of



Agaricus arvensis (Horse Mushroom). Pastures, in autumn; colour, yellowish white; gills pallid, at length black; diameter, 6 to 24 in.

rather uncommon occurrence, similar to the hairy variety of the Meadow Mushroom, the *A. villaticus* of Dr. Badham. It is a fine form, but, I think, very rare. I have only seen it once. Many country-folks readily distinguish the Meadow from the Horse Mushroom, and show antipathy to the latter, although they are always willing to put it into the jar as one of the ingredients of ketchup. Opinions appear to differ greatly regarding the excellence of this species. Mr. Penrose writes:—"I think young, and especially button specimens of this very indigestible; until they are well opened out, they are unfit for use." Such, however, I must say, is not my experience of button specimens. There is a strong odour attached both to the fungus and the spawn, the ground just below the surface being frequently white with the latter; or if horse-dung be kicked aside in a rich meadow frequented by graminivorous animals, the earth will frequently present a snowy whiteness, from the spawn of this species, from which the young individuals may be seen springing up. I once saw a sheep eat a large specimen with great apparent gusto, although the fungus was full of maggots. Pileus fleshy, obtusely conico-campulate, then expanded, at first floccose, then smooth, even, or rivulose; stem hollow, with a floccose pith; ring broad, pendulous, double, the outer split in rays; gills free, wider in front, at first dirty white, then brown, tinged with pink.

Cottage Cookery.—Now when the Potato disease is likely to leave us without Potatoes, perhaps a word or two on this subject may not be without interest. Food for working people must not only be as substantial as possible, but it must also be made savoury to be properly relished. It is in this particular that cottage cookery is most deficient, though in ancient times books indicate that many things were used to give flavour that are now neglected—Marigold flowers for instance. It is for want of savouriness that soups and stews have acquired the derogatory name of *messes*. It was to give savour that Count Rumford added salt herring to his cheap dishes; it is in this respect that French cookery for all ranks surpasses that of England; and until our housewives become instructed in the means of obtaining savouriness, economical cottage cookery is not to be hoped for. But how is this desirable quality attained in France? It is by the habitual employment of matters that give flavour; in the poor man's cottage those of little cost. A gentleman's cook would be thought shabby if asking at market for less than a sou's worth of "*herbes pour le pot au feu*," but the poorer orders are habitually served with a farthing's worth of vegetables for their soups; for their farthing they obtain a very small Carrot, a small Turnip, Onion or Leek, either full-grown or green, including green leaves, a sprig of Thyme, a little Mint, Parsley, or in lieu of it green tops of Celery, and to complete the vegetable ingredients of the soup either some Lettuce or Endive, often the surplus of a seed-bed, or plants not promising to come to perfection as salads. What would our cottagers say on being supplied with green leaves of Celery? Yet in France they are often substituted for Parsley. So many articles that we throw away are used for giving flavour in France; as the rinds of Oranges, for instance. Our Carrots and Turnips are too large to be only part of a farthing's worth; but why should not these roots be cut up for sale at petty stalls? The cottager has in respect to vegetables a great advantage over the townsman, for in the country an allotment will furnish a variety of vegetables by cultivating it only at odd times; even the yard of small cottages may be made to grow Parsley, Thyme, and other sweet herbs; but a first need is that of teaching housewives how to make good use of the products of their garden by a superior mode of cookery.

NOTES AND QUESTIONS ON THE HOUSEHOLD.

Rice.—This would make a good substitute for Potato food. It is particularly nutritious, and well adapted for use as a vegetable, especially in place of Potatoes, as the mode of cooking it is similar—simply boiling, and it has this advantage, that there is no waste whatever in the preparation for use. It is sold at a low price, and this year especially so, being about 1½d. per lb., or even less if taken in quantity: and 1 lb. of rice is fully equal, I consider, to 2 lbs. of Potatoes.—AN OLD INDIAN.

Horse Mushroom Ketchup.—Are Horse Mushrooms fit to make ketchup with, or is it not proper to use them for that purpose? There are so many Horse Mushrooms this year in proportion to the true meadow ones, that I am induced to make the inquiry.—W. D. [Ketchup made from Horse Mushrooms is very good and wholesome, but not quite so delicate in flavour as that made from the true Meadow Mushroom. The ketchup of the London markets is made almost exclusively from the former, with any fungi added, capable of yielding a black juice.]

Pilaf: a Turkish Dish.—Take three or four large tomatoes and boil them. When they are quite soft mash them well, adding a little salt, and put them back in the same water in which they were boiled, and add half a pound of rice. When the rice has absorbed all the water, and is well done, take the saucapan off the fire, and put it to stand near, so as not to cool; then put a good-sized piece of butter in a frying pan, and when it is well browned mix it up well with the rice, and serve it hot. It can also be made with bouillon in the place of butter.

Artichauts farcis à l'Italienne.—Trim off the top of the leaves of the Artichokes. Boil them for twenty minutes in salted water with the juice of a lemon. Drain them thoroughly. Take some anchovies; bone and wash them clean; then mince them finely with a small quantity of garlic; add some powdered thyme and pepper and salt. Open out the leaves of each Artichoke without detaching them; insert a small quantity of this mixture between each leaf. Tie up each Artichoke with thread; place them close together in a tin; pour plenty of olive oil over them; lay a piece of oiled paper on the top, and set them in the oven for about half an hour. Remove the threads before serving.

—Trim off the top and parboil them sufficiently to allow the small leaves and stem inside to come off easily; open out the leaves and remove the inside with the handle of a silver spoon. Mince very finely some ham and half its bulk of beef suet; add a small quantity of chopped shallot or garlic, pepper, salt, and minced or powdered sweet herbs to taste; then the same quantity of fine bread crumbs as of suet and the yolks of two or more eggs. Mix the stuffing well together, and fill the inside of each Artichoke with it. Pour two table-spoonfuls of olive oil into each, and finish as in the preceding recipe.

Stuffed Vegetable Marrow.—Pound to a paste in a mortar slightly rubbed with garlic, equal parts of veal and of ham; then pass them through a wire sieve, and return them to the mortar. Work into the paste thus obtained a fourth of its bulk of butter, and about the same quantity of bread crumb, with the yolks of one or more eggs, according to quantity. Add some minced parsley and, according to taste, pepper, salt, spices, and powdered sweet herbs. Cut in half lengthways a couple of average-sized Vegetable Marrows; take out the inside, fill each half with the stuffing, and wrap it up in a piece of thin paper well buttered and tied with string; lay them all close together in a buttered tin, cover this up with a plate or another tin, and put it into the oven. When you judge the marrows are quite done take them carefully out of the papers, lay them on a dish, and serve with a small quantity of well-flavoured clear gravy or some Tomato sauce poured over them.

THE FRUIT GARDEN.

THE GUAVA.

THE fruit of the Guava in its fresh state, like the Banana, is only really appreciated by those who have acquired a taste for tropical fruits. Nevertheless, it makes a very nice addition to the dessert, and as the Guava is of easy cultivation, one is surprised that it is not more generally met with. The Psidium Cattleianum is one of the very best, and is the kind from which the Guava jelly of commerce is made. Like all the genus it is a handsome evergreen shrub, sometimes attaining the height of 20 feet, bearing freely its purple, oblong, pear-shaped fruit, somewhat larger than the Morello Cherry. It may be grown in pots or on the back walls of early vineries; and as it makes a very ornamental wall plant, it might also be planted against the back walls of warm conservatories, as its white flowers are very beautiful. However, the best example of its cultivation I have ever met with was growing near the glass, trained to a wire trellis, something after the fashion of the Peach, but wherever grown, light is necessary to mature the wood. It might be grown successfully in any moderately warm plant house, where a little shade was not objected to, and trained under the roof, as by thinning the small branchlets in autumn, the obstruction to light would be considerably reduced in winter. The Guava is not particular as to soil, but a good turfy loam slightly enriched suits it best. It should be planted in a well drained border, as during its growing and fruiting season it requires a good supply of water, with occasionally a soaking of weak liquid manure. Like all the members of the Myrtle family, it is very subject to be attacked by thrips. It should therefore undergo a thorough cleansing every winter with soft soap, and the syringe should be used freely during the spring and summer months, when occasional fumigations of tobacco that will, in all probability, be required by the other occupants of the house, will generally keep it clean. There are one or two species that bear yellow fruit, but all are evergreen and have white flowers and are equally easy of cultivation.

E. HOBDAV.

ROOT PRUNING.

FOR promoting the fertility of fruit trees, root pruning is an operation now generally resorted to. If properly carried out, it is perhaps the most certain way to reduce a luxuriant tree to a fruitful state. We wish to emphasize the word *properly*, because it is quite as possible by root pruning to reduce a tree to a state of permanent sterility as to make it fruitful. Fruitfulness in trees of luxuriant habit, such as Apples, Pears, and Plums, and, in fact, in all other trees, depends upon that balance of force between the roots and branches which, while it ensures sufficient force in the branch, at the same time promotes the complete maturation of the wood, and thus the formation of flower buds. To hit the happy medium, to so balance the forces of the tree that fertility shall be attained without merging either into luxuriance or weakness, constitutes the success of the careful cultivator. If, however, trees are planted and, as is frequently the case with amateur cultivators, are allowed to grow on and on for years with the expectation that they will grow into fruit, the cultivator must not be surprised, if root pruning is resorted to and not very carefully carried out, to find his tree thrown into a state of unfruitfulness—sterile, in fact, until such time as sufficient force is again accumulated to form healthy growth. Fortunately, however, our leading nurserymen are so particular in the stocks they make use of, and resort so systematically to root-pruning and transplanting, that it is only by bad management after the plant leaves the nursery that the balance of force will be disturbed. Such disappointments, however, do occur, and generally result from mistaken kindness in using rich soils and manures. When the luxuriant habit is induced, the wood formed is too strong and sappy to form flower buds, and hence barrenness is the result. This may arise from over-rich soil, or from one or more roots rushing away deep into the subsoil, where they suck up such crude matter that growth is promoted late into the autumn instead of being brought into a maturing state not later than the middle of August. With the luxuriant tree, and when the luxuriance is the result of over-feeding for a series of years, the best plan will be found to lift it out carefully from the place in which it has been growing, to shorten in the strongest roots, and to plant it again almost upon the surface of the ground, using a little fresh soil

around the roots, and mulching the surface of the ground with some spent dung or leaf-mould. Carefully staked to prevent wind-waving, and the branches judiciously thinned out in early spring, and those retained shortened back, such a tree will be moderated in its growth the following season, and will almost invariably produce abundance of fruit buds. But if the check is too great, sterility may be the result for a year or two, which sterility will be the more quickly overcome by liberal treatment. So far, the treatment of unfruitful trees may be said to be confined to those only recently planted. When trees of more mature years are barren, then more cautious treatment must be resorted to. For example, nothing is more common than for Pear or Plum trees, of large size, when trained against a wall, to be entirely fruitless. To take up such trees and replant them would not generally be the right thing to do, because being of mature growth, the check of complete removal might be too great. In such cases the best thing is to commence at the extreme point of the roots, and to lift them, according to the size of the tree, to within two, four, or six feet of the main stem, and then to relay the roots near to the surface of the ground; or, in the case of wall trees, half the roots may be taken up one season, following them to the very base of the stem, and the remaining portion, if necessary, the following season. Such treatment cautiously followed out will generally restore the balance of force, and with it fruitfulness must ensue. Now come we to the ordinary trees—such as are prepared by root pruning before they are sent out from the nursery, and may be said to have been reduced to a moderate and healthy state of growth. These sometimes, if transferred to a rich soil, may start after a time into an over-luxuriant habit. In such a case it is customary to check them by root pruning, simply by digging round one side of the tree this year, and cutting off some of the stronger and more perpendicular roots, and treating the other portion in the same manner the following year. Early autumn, while there is yet some heat in the ground, is the best time for root pruning, as the warmth enables the wounds to heal quickly, and also to throw out fresh feeders so as to become re-established before the active growth of spring commences. Trees thus managed, with bi-annual attention to root pruning, may be easily kept in a constantly fruitful state, and for small gardens nothing looks so neat as bush or pyramidal trees so managed.

R.

How to Destroy Moss and Insects on Fruit Trees.—

Last year some fruit trees on the property of M. Adam, at Chapelles, Indre, an amateur horticulturist, were covered with moss and insects. This season the same trees can hardly be recognized, their bark being smooth, glossy, and healthy. M. Adam explained the cause of the change, and gave his recipe, which has been tried. I have modified it a little, and can advise all annoyed with either moss or insects to daub or besmear their trees from top to bottom with the following composition:—Boil two gallons of barley in water, and then take out the barley, which can be given to the fowls. In this water dissolve three gallons of quicklime. When it is cold mix two pounds of lamp-black, mixing it for a long time with a stick; then a pound and a half of flowers of sulphur (brimstone) and a quart of alcohol. Daub the trees with this by means of a paint brush, after having scraped off the moss with a rough brush. This composition destroys the cocoon (Chermes), the grub (plant louse), moss, and all insects, gives strength and suppleness to the bark, and certainly revives the aspect of fruit trees.—*Ed. André, in "L'Illustration Horticole."*

Greeley and his Pumpkins.—Mr. Greeley is a great man in the art of cultivating Pumpkins. The fame of Greeley's Pumpkins reached the ear of Mark Twain, and being of an inquiring turn of mind he interviewed the great man. The result of Twain's "pumping" is given in the form of a report in the *Pittsburg Gazette*. Mr. Greeley, says Twain, exhibited to an agricultural club a Pumpkin of his own raising. As it embodied his solitary and crowning success, after several years of discouraging failure in Pumpkin culture, the club surrounded it with uncovered heads and mingled motions of surprise, admiration, and envy. It was a superb fruit; and when Mr. G.'s hat was placed on it, to illustrate its size and symmetry, the hat and Pumpkin seemed so perfectly adapted to each other, and together produced an effect so startling, that several enthusiastic members swore they would have known who had raised that Pumpkin if they had seen it anywhere.

Eating Mangoes.—At a dinner-table you have to scoop out what you can of them (the large stone being in the way) with a spoon, but enthusiastic admirers of the fruit suck at it in undignified fashion, take off their coats to the work, and provide for the flow of the juice over their hands and arms by having a bowl (a finger-glass is ineffectual fooling)—a big bowl of water to wash in during the process. I have heard men say that when they give up an afternoon to Mangoes, they would not let their best friends behold them. Some, indeed, settle any question between finger-glasses and buckets, by getting into their baths at once when they court the adored fruit.—J. M.

GARDEN DESTROYERS.

THE NEW VINE PEST.

(PHYLLOXERA.)

WHEREVER this insect has been noticed, both the leaf gall-inhabiting and root-inhabiting types have been found, and I consider the gall-louse and root-louse identical. I have successfully transferred the leaf-lice on to the roots, while others have succeeded in obtaining leaf-galls from lice hatched on the roots, and the winged form obtained from galls in this country agrees in its characters with those from the roots. Moreover, the nodosities on the roots are perfectly analogous to the galls on the leaves, and differ only in just such a manner as one would expect from the difference in the plant tissues—a view greatly strengthened by the fact that when the gall-lice are forced, by their excessive numbers, to settle on the tendrils or leaf-stalks, they produce swellings and knots approaching more nearly to those on the roots than to the galls. These facts sufficiently attest the identity of the two types, and thus we have a case of an insect possessing two distinct habits. It is also like many others of its family, polymorphic, *i.e.*, it exists in different forms; yet we have to do with but one species.

FURTHER FACTS RESPECTING ITS HABITS.

The young hatched from eggs on the roots are absolutely undistinguishable from those hatched in the galls; and the gravid apterous female differs in no respect whatever from the mother gall-louse. There is, however, a different egg-depositing form, which, as it moults, becomes tubercled, and more elongated or pear-shaped, as shown in our illustration at *j*. Some of these tubercled individuals remain without wings, while others seem to be destined from the first to acquire wings. The young, after attaching themselves, become in a measure stationary, and remind one very much of young bark-lice. The fine hair-like setæ, which in their functions and elasticity are analogous to our tongue, become loosened from the more fleshy rostrum or sheath, as shown at *j*, and are often so firmly inserted into the root that the louse, if disturbed from its place, generally hangs by them. Three of the threads of this tongue are sufficiently conspicuous, but there should be, from analogy, four. The females on the roots seem to be less prolific than those in the galls, and their eggs if anything are rather larger. These eggs are always of a bright yellow colour, and, on the dark root, are detected with the naked eye as readily as the lice, which become darker or of a dull orange as they grow older.

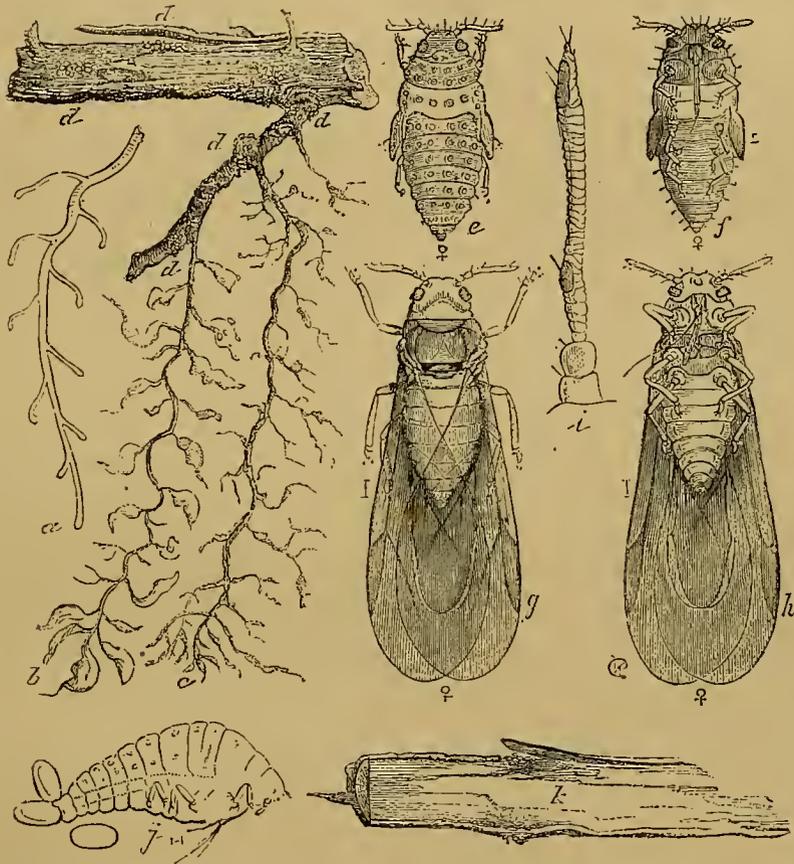
The insect is found on the roots in all stages during the

summer months. In the winter it is found dormant, principally in the larva state, and no eggs are to be seen. With the circulation of the sap in spring, the activity of these young pests recommences, and in a short time afterwards eggs are deposited again. At this season the punctures of their little beaks produce very decided swellings and an excess of moisture at the wounded parts. The winged forms are by no means uncommon, and commence to issue from the ground perhaps as early as July. The pupæ are easily recognizable with a good lens, by the little dark pad-like wing-sheaths at the sides of the body, and the sexes may even be distinguished at this stage by the greater constriction of the body near these pads in the female, compared with the male, her abdomen being larger. Before giving forth the winged insect, these pupæ become quite restless and active, and in a state of nature they no doubt issue from the ground.

The winged female seems to be much more common than the male, and is distinguished by her more lengthened abdomen—the wings, when closed, extending not much more than its length beyond the tip, while in the male they extend more nearly three times its length.

In European varieties the roots get badly affected, but there are no leaf-galls. In American vines both roots and leaves get affected, but it has been noticed that where leaf-galls are few, root-lice have been abundant, and *vice versa*. Few vines are entirely free from the attacks of the root-louse; but the European varieties are most susceptible to it—the Northern Fox next in order, the River Bank Grape next, and the Summer Grape the least affected. From examination, it would likewise appear that galls are occasionally found on all species except the European, but as they have in a few instances been found on this species in Europe, it cannot be considered

entirely exempt. Indeed, I have been informed by Mr. Glover, of the Department of Agriculture, that the leaves of certain European vines, in greenhouses, such as Muscat, Hamburg, and Mrs. Pince were covered with the galls, even as late as December, and that they had begun to spread on to several other kinds of vines. In America, in general terms, the River Bank Grape must be considered the species which the gall-louse prefers, but no vine, whether native or foreign, is exempt from the attacks of the root-louse. Yet, on the principle that a small dose of poison may prove harmless or even beneficial where an over-dose will kill, we find that a small number of root-lice produce no serious effects upon the vine; and that it is only where they are very numerous, and cause not only the fibrous roots, but even the larger ones to waste away, that their evil effects are per-



REFERENCES.—*a*, shows a healthy root; *b*, one on which the lice are working, representing the knots and swellings caused by their punctures; *c*, a root that has been deserted by them, and where the rootlets have commenced to decay; *d, d, d*, shows how the lice are found on the larger roots; *e*, female pupa, dorsal view; *f*, same, ventral view; *g*, winged female, dorsal view; *h*, same, ventral view; *i*, magnified antenna of winged insect; *j*, side view of the wingless female, laying eggs on roots; *k*, shows how the punctures of the lice cause the larger roots to rot.

ceptible. In France, according to M. Laliman, the American varieties which have resisted the root-louse best are the Clinton, Taylor, Herbemont (known there as Warren), and some others which are considered valueless here, such as Pauline, Elsimboro, Lenoir, Mustang of Texas, and a kind of York-Madeira; while those which succumb are Isabella, Scuppernong, Concord, Norton's Virginia, Maxatawny, Hartford Prolific, Cynthiana, &c. This experience differs a little from ours, but shows that the *Labruscas* suffer most.

MEANS OF CONTAGION FROM ONE VINE TO ANOTHER.

The young lice, whether hatched upon the roots or in the galls, are quite active, and crawl about for some time; and that they will spread from one vine to another, either underground upon the roots, or on the surface of the ground during the night, is highly probable. Such, however, cannot be the mode of spreading from one vineyard to another; for were it so, the malady could not possibly have assumed such proportions in so short a time as it has done. One method of transport is upon the roots of seedlings and cuttings, but the insect cannot in this manner find its way to an old vineyard, and there must be still another means. In this country the malady is general, but in France, where it is still spreading from one place to another, they have a good opportunity to watch its progress; and Planchon finds that it always commences at certain circumscribed points, and spreads from these points in more or less regular circles. There is no way of accounting for these nuclei—these starting points in the centre of an old vineyard that never showed signs of the disease before, except on the hypothesis of the winged insect having flown there and started the colony. We have already seen that certain individuals of the root-inhabiting type become winged. Why these individuals become winged while others never do, is, perhaps, not for us to understand; but our winged female *Phylloxera* is a reality! What, then, are her functions? In the breeding jars she invariably flies towards the greatest light, and her large compound eyes and ample wings indicate that she was made for the light and the air. We have also seen that she is burdened with two or three eggs only, and my opinion is that her sole life duty is to fly off and consign her few eggs to some grape-vine or grape-bud, and that the lice hatching from these eggs constitute the first gall-producing mothers.—*Riley's Report on Noxious Insects, &c.*

(To be continued.)

DRYING PLANTS.

As regards the best mode of drying plants, so as to preserve their colours, *Science Gossip* has the following:—The materials required are common cartridge paper, thick white blotting paper, cotton wadding, and millboard, all cut to the same size. The plants should be gathered in dry weather, and soon after the flowers open, when their colours are brightest. Succulent plants (such as Daffodils, Orchis, or Stonecrop) should be put into scalding water, with the exception of the flowers, for a minute or two, then laid on a cloth to dry. Arrange the specimens and paper in the following order:—Millboard, cartridge paper, wadding (split open, and the glazed side placed next to the cartridge paper), blotting paper; the specimens having small pieces of wadding placed within and around the flowers, to draw off all the moisture as quickly as possible; blotting-paper, wadding as before, cartridge paper, millboard. When the specimens, &c., are thus arranged, heavy weights should be put on them; about 30 lbs. the first day, 60 lbs. afterwards. Remove them from under pressure in a day or two; carefully take away all the papers, &c., except the blotting-papers between which the specimens are placed; put these in a warm air to dry, whilst the removed papers, &c., are dried in the sun, or by the fire. When dry (but not warm) place them in the same order as before; put all under the heavy pressure for a few days, when (if not succulent) they will be dry. Flowers of different colours require different treatment to preserve their colours. Blue flowers must be dried with heat, either under a case of hot sand before a fire, with a hot iron, or in a cool oven. Red flowers are injured by heat; they require to be washed with muriatic acid, diluted in spirits of wine to fix their colour. One part of acid to three parts of spirit is about the proportion. The best brush with which to apply this mixture is the head of a Thistle when in seed, as the acid destroys a hair pencil, and injures whatever it touches (except glass or china); therefore it should be used with great care. Many yellow flowers turn green even after they have remained yellow

some weeks; they must therefore be dried repeatedly before the fire, and again after they are mounted on paper, and kept in a dry place. Purple flowers require as much care, or they soon turn a light brown. White flowers will turn brown if handled or bruised before they are dried. Daisies, Pansies, and some other flowers, must not be removed from under pressure for two or three days, or the petals will curl up. As all dried plants (ferns excepted) are liable to be infested by minute insects, a small quantity of the poison, corrosive sublimate, dissolved in spirits of wine, should be added to the paste, which it will also preserve from mould. The best cement for fixing the specimens on to the paper or cardboard is gum paste. It is composed of thick gum-water and flour mixed in warm water by adding the two together, warm, and of a consistency that will run off the hair pencil.

MEMORANDUM OF THE FIRST COMMISSIONER ON THE MANAGEMENT OF KEW GARDENS.

(Continued from p. 189.)

THE APPOINTMENTS BY COMPETITION.

ONE more topic raised by Dr. Hooker which is of public interest remains to be noticed. On the introduction of the system of appointment by open competitive examination, the First Commissioner agreed to surrender to the Civil Service Commissioners his right to nominate to any subordinate technical office in the Department of Works. The system under her Majesty's Order in Council has been found to work admirably for the purpose of providing technical officers. Two cases have occurred in which subordinate offices in Kew Gardens have had to be filled. Dr. Hooker has desired to nominate the person to fill the vacancy in each case, but the First Commissioner has declined to reverse the open competitive system; in one of the cases the system has been eminently successful, in the other it has failed; both are instructive examples. A vacancy being imminent in September 1871 in the office of junior assistant in the herbarium, Dr. Hooker recommended a person to fill the vacancy; he was then informed of the introduction of the new system of open competition. A considerable correspondence took place between the First Commissioner and Dr. Hooker, the Treasury, and the Civil Service Commissioners, respecting the mode of filling up the appointment, and the nature of the examination. In the end a person was appointed by an open competition in February 1872, not being the candidate nominated by Dr. Hooker. Being admitted to probation under the terms of her Majesty's Order in Council, the assistant has proved himself so well qualified for his office, that Dr. Hooker has recommended him to fill a vacancy in the superior grade, and he only waits the completion of the six months' probation to be recommended for promotion by the First Commissioner. Dr. Hooker, however, still proposes to revert to the practice of his own nomination. The First Commissioner having submitted the objection to open competition to the consideration of the Civil Service Commissioners, they concur with the First Commissioner in a course which appears to him to obviate all objection. The other case arises out of the discovery by the First Commissioner that the Curator of Kew Gardens had been grievously overtaxed in the performance of his duties, by being obliged to devote his evenings to a late hour on the accounts and correspondence at Kew.

THE CURATOR'S CLERK.

On the 1st July 1871, the accountant of the Office of Works reported on the management of the accounts at Kew, suggesting the appointment of a clerk. This report being sent to Dr. Hooker, he urged upon the First Commissioner the expediency of adopting that course. The Treasury sanctioned the creation of the office of clerk to the Curator. The usual arrangements were made between the secretary, the Civil Service Commissioners, and Dr. Hooker, for the appointment of the clerk by open competitive examination. On the 1st of February 1872 the clerk was appointed by the Civil Service Commissioners by open public competition. On this appointment being notified to Dr. Hooker, he forwarded a letter from the Curator of Kew Gardens, objecting to it on the ground that the clerk was utterly unfitted for the duties and responsibilities explained to him by the Curator. A correspondence then went on to ascertain what were the duties for which the clerk was fit or unfit, until the First Commissioner at length requested the Director to certify whether the clerk was fit to be employed on probation for the duties of the office as defined in Dr. Hooker's letter recommending its creation. On this the Director certified that he was unfit, and the First Commissioner referred the case to the Civil Service Commissioners for their consideration. The Civil Service Commissioners declined to cancel the appointment, and recommended that the clerk should be

taken on probation, and that if reported unfit at the end of six months, he should be discharged in terms of the Order in Council. The First Commissioner having in vain urged the Director to take this course, finally, after consulting the Treasury, which is the regulating authority, discharged the clerk, and communicated the result to the Civil Service Commissioners and to Dr. Hooker. The failure to appoint a competent clerk appears to the First Commissioner to be due to two causes; that sufficient publicity was not given to the proposed competition, and that sufficient precaution was not taken to ascertain the technical qualifications of the candidate. It is, however, to be observed, that if Dr. Hooker was prepared to nominate a competent clerk, it was his public duty to direct his nominee to go before the Civil Service Commissioners, and submit him to the test prescribed by the Order in Council, for there is no doubt that the clerk appointed by the Civil Service Commissioners was the most competent of the candidates. As these two offices are thus again vacant, the First Commissioner deems it right to institute a comparison between the proposal of the Director to nominate the officer, and the Order in Council to appoint by open competition. The superiority of private nomination can only be maintained on the ground that a person privately nominated will necessarily be better than anyone who may become a competitor when the vacancy is made known, or that the mode of conducting the competition does not admit of the real merits of the competitors being ascertained, and that the person to be privately nominated would be superseded by a person of inferior merit. The first proposition being untenable, it is apparent that the real objection is not to open competition, but to the mode in which the competition is conducted. The First Commissioner sees no reason to doubt that the Civil Service Commissioners can so conduct the examinations for technical appointments as to ensure the person best qualified for a technical service being appointed by them; he is satisfied that the arrangement last proposed by them will effect that object, and he therefore has not seen any sufficient reason to abandon the system of open competition in favour of private nomination in filling up the vacant offices at Kew.

THE ACCOUNTS.

As the correspondence above noticed shows that there is now a disinclination to have a clerk at all at Kew, it is proper to observe that the appointment was recommended not merely on grounds relating to Kew Gardens, but with reference to the general administration of the Office of Works, and the necessity in any properly organised establishment of providing a succession of competent persons for the performance of particular duties. There can be no duty more troublesome than that imposed on public servants, to receive and train probationers and persons newly entering the service, but this is as much a part of their duty as any other service they perform, and from this the establishment at Kew has no claim for exemption. It has now become necessary to revise the system of vouching and examining accounts in the Office of Works; at present all accounts from Kew are only signed by the Director, but every public voucher should be certified in the following particulars as completely as if the form of certificate were annexed to each account:—The authority for the expenditure; the sufficiency of the quantity and quality of the work or goods, according to contract or other proper standard, ascertained by actual weight, measure, or other process; the correct calculation of the rates of charge and of the total amount; the actual payments and receipts, according to the account. It cannot be expected that the Director of Kew is to undertake all these duties himself, but it will be necessary that every account should be signed by the person who actually performs this duty. It seems expedient that the accounts department at Kew should be strengthened, whilst the time of Director and Curator is left for their special functions.

KEW *v.* LONDON.

Without any communication with the First Commissioner, Dr. Hooker attended before the Commissioners on Scientific Instruction, and gave evidence respecting the administration at Kew; this having accidentally come to the knowledge of the First Commissioner, he requested the eminent naturalist, Professor Owen, to favour him with his views, raising very interesting questions. The House of Commons have sanctioned an expenditure of more than half a million of money for the purpose of constructing a new museum of natural history, and these important questions will have to be dealt with when the museum is ready for occupation:—Whether it is desirable on the grounds of science, public utility, efficiency, or economy, that two museums should be kept up, with their libraries and staff of public servants, to prosecute the science of botany, or whether an accomplished botanist might be placed in charge of the whole collection to be brought in correlation with Palaeontological botany, and the other branches of natural history? whether, having regard to the fact

that the Kensington Museum will be close to one station and Kew Gardens close to another, on a short line of railway, with telegraphic communication between one institution and the other, the chief botanist in the public service might superintend a complete botanical collection at Kensington, and illustrate it by lectures to male and female classes, and might give directions to the horticulturist at Kew to cultivate whatever specimens were required, and to forward such of them as might be necessary or convenient to be added to the museum, or to be used for demonstration? whether the chief botanist could visit Kew as often as he desired, with or without his classes, or reside there, coming to the museum during museum hours; whether the sum now spent on the collections, library, and establishment for botany at Kew, might be expended in completing and improving the establishment at Kensington, or be saved? whether the Curator of the gardens, receiving and complying with botanical requisitions, and obtaining botanical advice from the chief botanist, could manage Kew Gardens as effectually as accomplished and experienced horticulturists manage other gardens? and whether, having his efforts recognised by, and known to the public, he would be encouraged to new exertions by the well-merited reward of public approbation? Though these questions need not, and as the First Commissioner thinks ought not, to be solved until the circumstances which may exist at the time of the completion of the new museum are fully considered, it appears to the First Commissioner to be his duty to take care that in the meantime no new expense is incurred at Kew which will in the least embarrass the Ministers of the Crown or the House of Commons in arriving at a decision.

KEW GARDENS.

No one who has known Kew since Aiton's time, and who, like the writer, has watched its progress, can hesitate to say that, judged either from a cultural or artistic point of view, it has been seen in much better condition than it is in at the present time. Its flower gardening, closely looked into, is inferior to that of many of the parks, while the plant cultivation, taken as a whole, is not superior to that of many third-rate establishments. The excuse which a contemporary has made for this is a very feeble one; there is no more reason why the plants at Kew should not be perfectly grown, than that the Duke of Devonshire or Sutherland should not have superior fruits, simply because their establishments are larger and require more management than those of the squire, parson, or tradesman close by. The reason why small establishments are frequently better managed than large ones is often because they do not attempt more than they can manage.

"Oh, hut," exclaims some scientific enthusiast, "look at the botanical interest?" Well, I have looked, and having identified a lot of things which have neither cultural, commercial, nor decorative interest, see no more need for retaining them, except in the herbarium, than for retaining the crop of weeds which, unmoested, would soon choke my supply of Cabbage and Lettuce plants. If the plants have any value in the arts, manufactures, or medicine, retain them; but if they have no value in any of these, and fail as regards decorative purposes, then I say relegate them to the rubbish heap. Apply this rule to Kew, not with an arbitrary hand, and there would be ample room to grow most plants, if some one who knew their wants and capabilities had the management of them. But Kew is great in natural features. Recently when walking through, and noticing that many of the tree Ferns, Palms, &c., were disfigured by dead fronds—further disfigured and wreathed together by mealy-bug and other insect pests—I asked one of the attendants why the fronds were not removed; he answered, "We are forbidden to remove them, the authorities considering it natural that plants should have dead leaves." Nature does her work in her own way; the tornado or the storm may do the necessary plant scavenging, but it is different in our plant houses, where only the soft sighs of the west wind are allowed to breathe upon the plants, and there, in consequence, man must remove the leaves which under other circumstances plants would get rid of in a natural manner. Nature is a capital handmaiden, a safe guide; but if under artificial conditions we follow her slavishly, unthinkingly, we are safe to be landed in a dilemma.

From what Mr. Croucher has said, and from what I have heard from other employes, past and present, at Kew, I am far from believing it is the best managed horticultural establishment in the country. As has been already shown, the flower gardening and plant culture are bad, and the landscape work, whoever may be responsible for it, is simply contemptible. As a botanist, Dr. Hooker is undoubtedly entitled to rank with the foremost savans of the times, but judging by the present state of Kew, I should certainly hesitate, if I wanted a gardener, before engaging Dr. Hooker in that capacity. For the vast sums of money expended, the country is entitled to much more value than we at present get at Kew.

While some of the parks are really well done, we have no right to sit down with respectable mediocrity in the most liberally endowed botanic garden in the world.

R. H.

[We must say that we think the old fronds a great improvement to the aspect of tree Ferns, especially after a good layer of them has fallen down; and some think they are slightly beneficial. We, however, know no other class of plants of which the same could be said.]

GARDENING FOR SEPTEMBER.

THE INDOOR GARDEN.

BY T. BAINES, SOUTHGATE.

Conservatory.—The most attractive flowering plants in conservatories for the present month will be the different varieties of *Lilium speciosum*, *Vallota purpurea*, the good old, but often neglected *Rochea falcata*, and the still rarer *Griffinia hyacinthina*. If these things are grown well in sufficient quantities, intermixed with the general occupants of the conservatory, they will keep up a display for five or six weeks, especially if a portion of the stock is retarded by being placed where it will receive comparatively little sun and abundance of air. See that all these things receive regular attention as regards water, as any omission in this matter will make short work of the blooms, and in the case of the Lilies will destroy the foliage. Keep a good look-out for that most destructive of all plant pests, red spider. If allowed to establish itself even thus late in the year, it does irreparable damage for another season by premature destruction of the foliage of any plant which it happens to attack. *Chrysanthemums* will now require rich and copious waterings twice a day if the weather is dry, and their pots are filled with roots, as they ought to be by this time. Syringe them overhead in the evenings of bright days; if this is attended to they rarely get infested with greenfly. Pay every attention to winter-flowering plants, such as *Cinerarias*, *Primulas*, *Euphorbias*, *Poinsettias*, *Bonvardias*, *Salvias*, &c.; the more stout and robust these plants are now, the better they will bloom, provided they are well ripened. If *Poinsettias* and *Euphorbia jacquiniiflora* have been placed in a cooler situation during the last month than they have previously occupied, they should be removed from such a position before the nights become too cold, or both leaves and roots will suffer, which will be fatal to their blooming. By the third week in the month, all the occupants of the stove and intermediate house that have been used for conservatory decoration during summer should be removed to warmer quarters, otherwise they will be injured. *Achimenes*, *Tydas*, *Gesneras*, and *Gloxinias*, should now be dried off and put to rest, placing them in a situation free from damp, where the temperature will not get lower than 50°, otherwise they are in danger of rotting. See that pot *Roses* out in their summer quarters are sufficiently supplied with water, and that their foliage is kept free from mildew by applications of sulphur, should that pest make its appearance. *Eucharis amazonica* should also now be placed in a warmer temperature than that of the conservatory, or it will suffer. If a late sowing of *Asters* has been made with a view to their being potted for conservatory decoration when coming into flower about the end of the month, provision should be made for covering the bed with loose lights to protect them. See that such things as *Acacias* and *Cytisus* are fully exposed to the sun in an open situation, for the better they get hardened out of doors the more satisfactory will be their blooming. Put in another batch of *Hydrangea* cuttings; these will bloom late in the summer if kept cool during the spring, and will come in when flowering plants are scarce. Attend well to herbaceous *Calceolarias*, so as to get the plants stout and strong; by this means they get so much better through the winter. Conservatory climbers should now be regulated, reducing freely all excessive growth, so as to allow of its being sufficiently thin for each plant to get thoroughly ripened before the short days are upon us.

Stove.—Reduce the shading here to a minimum, but do not remove it altogether, for sometimes we get extremely bright weather even up to the end of the month, by which very much injury is done by scorching, especially as it is necessary now to use much less moisture in the atmosphere, as well as to admit more air; both of which render the foliage more liable to scorch. The object of the cultivator in this matter ought to be to just shade sufficiently to prevent injury, but no more, not even for a single hour. This is a point the importance of which I would urge, as so much depends upon the manner in which stove-plants are treated in this respect, during this and the following month, with a view to their flowering freely the ensuing season. From *Allamandas*, *Clerodendrons*, and *Bougainvilleas*, gradually withhold water, allowing them to flag for a day or so before giving any, and then only give it in reduced quantities; by continuing this treatment the soil in the pots will gradually get to that (at this time of year) necessary condition as to moisture, that it contains just sufficient moisture to maintain the roots in health, without inducing any disposition in the plants to form more wood. *Stephanotis* requires to be kept after this time comparatively dry; but unlike the preceding plants, being evergreen, it will not answer if the soil gets too dry, as the leaves would suffer and drop off. *Dipladenias* should also be kept drier than when it is desirable to encourage

active growth, yet not so dry even as the *Stephanotis*. *Ixoras* again must be kept at this season drier than when their growth is most active, but must never be allowed to get too dry, or they will suffer to an extent that will take the best part of a season to recover them. Nothing adds more to the good appearance of the stove than a few suspended baskets of such things as *Hoya bella* or the different varieties of *Æschynanthus*; of the latter, *A. splendens* and *A. Boschianns* are most desirable plants, of graceful drooping habit, brilliant and free-flowering; growing freely in an equal mixture of loam and peat, with sufficient sand to insure porosity.

Fern House.—Reduce the atmospheric moisture here, and also the roof-shading, but this only in a comparative degree, Ferns having no wood to mature and solidify like flowering plants, neither require, nor will they bear this additional sunlight and drier root treatment being carried so far as in the case of flowering plants, without suffering seriously. What they do require at this season is simply to carry this treatment so far as to check the disposition to make growth and rest the plants, so as to get them in that condition that they will move with vigour when the season of active growth comes round.

Azaleas.—The late-blooming plants will now be setting their flower buds, and should be no more shaded. The syringe should also be withheld, simply throwing a moderate amount of water about the floors and paths, at say four o'clock, when the house should be closed, allowing the temperature to rise by sun-heat, which is at once the most genial to the plants and the most economical. Continue this practice until the flower-buds are up as large as small *Camellia* buds. If their inveterate enemy, the thrips, makes its appearance, give it no quarter; any delay in this matter entails a serious after expenditure of labour. Get all the plants, large and small, tied before they have quite completed their growth and the wood becomes hardened thoroughly, as after this they are too stiff to regain the natural position of their shoots after tying.

Hard-wooded Plants.—These will now be out of doors to harden and mature their season's growth. See that they are well attended to with water, and syringe in the evenings all such as are not liable in the winter to the attacks of mildew. On the other hand, see that they do not get their soil too much drenched by heavy rains, otherwise irreparable injury will follow.

Orchids.—As the days shorten use correspondingly less shading; that is, do not draw down the blinds so early in the mornings, and remove them earlier in the afternoon than hitherto; also diminish somewhat the amount of atmospheric moisture. All plants nearly finishing growth require to be kept drier at the root. Where there is not the convenience of different houses to accommodate plants at rest apart from such as are growing, and which require more heat and moisture, the growing plants ought to occupy the warmest end of the house, at which apply all the moisture given to the house, and admit all the air required at the opposite end, where the plants are placed that have finished their growth. This may appear somewhat of a makeshift arrangement, nevertheless I have seen some of the best grown plants I have ever met with, where such was the only arrangement possible.

Heaths.—These should all be now fully exposed in the open air, except such as evince, by the absence of free growth, that they are weak at the roots. If any such exist it is better to keep them under cover, giving all the air possible night and day, and be careful not to let them get too wet at the roots. Heaths that become somewhat stagnant at the roots in the way described may sometimes be brought round by careful treatment of the soil, whereas if they are subjected to the trying ordeal of full exposure, the chances are that they will perish.

THE FLOWER GARDEN FOR SEPTEMBER.

BY GEORGE WESTLAND, WILEY COURT.

The favourable weather which we have had during the last fortnight has induced most plants to bloom in great profusion, whilst the fresh verdure of the grass sets them off to increased advantage; both foliage and flowering plants are now, indeed, in the best possible condition. Fine, however, as *Geraniums* are, I perceive a great and growing mistake in their excessive use in the embellishment of our gardens. I have seen several places this season where they have been used almost exclusively. I have no hesitation in assigning to them the first place among summer flowering plants; but *Geranium* gardens I consider to be neither elegant nor pleasing; therefore it would be advantageous to confine their use to reasonable limits, especially when there are so many other fine flowering and foliage plants to select from. As the season advances the greatest vigilance will be required to render flower gardens enjoyable to the longest possible period by so regulating the growth as to preserve proper

outlines, more particularly in the case of geometric designs, removing all faded blossoms and decayed leaves.

Dahlias and Hollyhocks should have their branches occasionally tied up, so as to secure them from being broken by high winds. A successional sowing of hardy Californian annuals should now be made, as those sown now stand the winter best. The most suitable situation for them is one that is somewhat sheltered, yet not overhung, by trees, and they like a rather poor soil. As a list of the best for spring decoration may be desirable, in addition to those previously named, the following will be found useful, viz.: *Eucharidium graudiflorum*, *Clarkia pulchella*, *Eutoca viscida*, *Nemophilas*, *Whitlavia grandiflora*, *Silene vespertina*, *Godetias*, and *Virginian Stocks*. Attend to the thinning out of those previously sown as soon as they are fit to handle. Plant out Pinks, Pansies, Carnations, and Picotees that are sufficiently rooted, and pot up such as have been prepared from the open border for early forcing. This is a good time to apply salt to garden walks; choosing a dry day, if possible, for the operation. It is a good plan to turn up the edges of the walks with a hoe previously to scattering the salt, which will protect the verge from being damaged; otherwise do not salt nearer to the edging than a foot without proper precautions. I have known it washed into the edging with the most destructive effect.

The propagation of evergreens should now be seen to; and from the middle of September to November is the most favourable season for transplanting the generality of trees and shrubs. Anything in the shape of disarrangement, however, must be avoided; but the earlier in the season the planting can be done the greater are the chances of success, and that, too, with little after labour. Clematises are now flowering in great splendour, creeping over beds, and are worthy of every attention so as to lengthen the season of bloom. For this purpose water freely with liquid manure, which should also be extended to all plants that show the least signs of exhaustion, either from flowering or poor soil.

Pits and Frames.—Propagation should now be vigorously pursued. The young shoots of the Japanese Honeysuckle (*Lonicera aureo reticulata*) will strike now as freely as a Verbena, and when seen in really good trim it makes a most charming edging, perhaps unequalled by any other golden edging we possess when frequently cut down. Geraniums should be potted from the open ground as soon as rooted. I never had a finer strike of these than I have this year in the open ground. Continue to pot off all kinds of cuttings as they become sufficiently rooted, and expose such as are thoroughly established by placing them in exposed places upon a bed of ashes, as they stand the winter with far less care when properly hardened than when in a comparatively soft state. Sow Ten-week Stocks and Mignonette for succession.

One of the most important things claiming attention at this season is preparing bulbs for early forcing; success in a great measure depends upon their being obtained in time and potted early in the month. The common cheap single kinds are by far the best for early work, and a turfy loam and thoroughly decayed manure, rendered porous with sand, will be found a good compost. For the earliest batch I do not think that so large or deep pots as are recommended are at all necessary; indeed, I find growing the majority with three and five roots in a 6, 7, or 8-inch pot to answer well; we look upon it in short as a great mistake to plant roots in large pots for early forcing. I have for years selected from the best bedding-out sorts, which are bought cheaply, the best roots, and plant from ten to twelve bulbs in 12 and 13-inch pans, from which I get good spikes of flower, and I have often been better satisfied with these than with large and more expensive roots. After potting give a good watering, and place the pots upon ashes, to prevent the ingress of worms, and when the surface has dried a little, cover the whole with sifted ashes for a month or so, in order to encourage root action before the top gets excited.

THE FRUIT GARDEN FOR SEPTEMBER.

BY WILLIAM TILLERY, WELBECK.

Outdoor Fruits.—The rainfall in the beginning of August was again excessive, nearly two inches having fallen up till the middle of the month in this locality. On the 15th a fine, dry, warm period set in, which has helped to ripen the buds of fruit trees on walls and in the borders. Where the foreshortening and nipping in of the shoots and laterals of the bush and pyramidal trees in the borders have been neglected, no time should be lost to get this done so as to give the trees a chance of ripening their wood. The gathering and storing of the crops of Pears and Apples this autumn will not take up much time or attention, but what there are will soon have to be looked after as they ripen, and the fruit-room cleaned and prepared for their

reception. Pears should be laid singly on the shelves of the fruit room, as well as the best sorts of Apples, and they are much improved in flavour by keeping them in a dry, warm place for a few days, before being used for the dessert. That beautiful little early Pear, the Doyenné d'Ete, has with me been very fine this year on an east wall, as well as on standards; Maria Louise, Bœurré Superfin, Glou Morceaux, the Seckle, Louise Bonne, and Winter Nelis on the walls and on a wire trellis, have likewise cropped well. With me, Apples of all sorts are a complete failure; the Oldenburgh, a Russian sort, and Lord Suffield, being the only varieties that have shown a fair sprinkling on the trees. There never was a finer show of bloom, but the frost and sleet showers in the spring cut it all off. Small fruit, on the whole, was a better crop than was expected here, and if the Strawberries had not been injured by the constant heavy rains in July, there would have been a very plentiful crop. In making a selection of Strawberries for planting out, the Elton Pine should not be overlooked, for it is the best late sort we have to prolong the season; the Frogmore Late Pine is another good-flavoured late kind, but on some soils it does not grow well. For the last two seasons I have grown immense crops of the Lawton American Blackberry, and the fruit makes the most delicious of all preserves, mixed with a few Apples to take off the sweetness. Some of the varieties of the autumn fruiting Raspberries are likewise deemed invaluable here for furnishing nice dishes of fruit for the autumn dessert, or for making ices with. I therefore highly recommend the planting of these fruits to all who do not grow them. The Strawberries intended for forcing should be in their fruiting pots as soon as possible. They should be set in beds in some open, sunny situation, and on a stratum of ashes to prevent worms from entering the pots. All the runners must be pinched off as soon as they appear, and, if the weather be dry, the plants must be freely watered.

Vineries.—The foliage of the vines in the early house will now be quite ripe and falling, and the vines may be pruned and dressed for forcing in November. Vines in pots for early forcing may be placed out of doors, and the pots should be laid on their sides in very wet weather, to prevent the roots from being too much drenched before they are taken into the forcing houses. Late vineries, wherein Grapes are ripening, should have plenty of air in favourable weather, and some at night in dull cold weather, when fire heat is applied. All outside borders should, if possible, be covered with lights, or wooden shutters to keep them dry, before the cold autumn rains chill the roots.

Peach Houses.—The crops of Peaches and Nectarines in the late houses will now be nearly all ripe, and when the fruit is all gathered the trees must be well syringed with soft soap, or Gishurst's Compound, to prevent the brown scale from attacking the wood. The trees in the early houses which have ripened their wood may now have the foliage brushed off with a new broom, and the wood loosened from the trellis. Now is a good time to get a store of turfy loam stacked up to keep it dry, should the planting of Peach and Nectarine trees be decided on in October or November, either for out of doors or in the houses. I find Peach and Nectarine trees do best in fresh turfy loam without the addition of manure of any kind in the soil, as it only makes them produce strong watery shoots, which never ripen well. Of all things to be avoided in the soil is rotten old tan, vegetable mould, or any material containing pieces of rotten sticks, for they all breed fungi, and when they attack the roots of Peach trees they are soon totally unproductive. The roots of vines are likewise liable to be attacked by them, and the failures in crops of Grapes from these are often attributed to some other cause.

Orchard Houses.—When the fruit is all gathered from the trees in pots in these structures, the pots may be placed out of doors, and if they are plunged in some warm corner, it will save some watering. The late crops of Peaches and Nectarines, Plums, and so on, will want a thorough watering now, to swell the fruit. In cool orchard houses, some of the late varieties of Peaches and Plums can be kept later than those on the walls or open borders.

Cucumbers.—Too much syringing will now be injurious to late Cucumber plants, as the sun's heat will be gradually declining. If thrips put in an appearance, remove the infested leaves, which are generally the old ones, and famigate two or three times at the intervals of four or five days, till that pest is conquered. Mildew will sometimes attack Cucumbers in frames or damp pits, and flowers of sulphur must be applied till it disappears. The plants intended for the winter supply must now be planted in the house or pit as early in the month as possible, on purpose to get them strong before the short days set in. The soil for them is most suitable when of a light sandy loam, enriched with old frame manure, or that from a spent Mushroom bed.

THE PINERY FOR SEPTEMBER.

BY JAMES BARNES.

WE have now arrived at the kindest growing part of the season, so that little trouble or anxiety is necessary in any department. Fruit will colour freely by the application of abundance of light and air, and the withholding of humidity. Swelling fruit requires applications of tepid, clear manure water, kindly applications in suitable weather of atmospheric humidity, and the interior atmosphere charged with ammonia. Air freely by day, and use no shading. From plants now showing flower, atmospheric moisture should be withheld till after they have bloomed, after which apply it freely. Plants intended to show fruit in October and November should now be aired freely, night and day, humidity withheld, and root waterings not too freely applied; but never let them be famished for lack of water, or they will produce weak and abortive fruit. Plants intended to rest and harden in October and November for starting into fruit in December and January next, should meet with every growing encouragement by the application of tepid manure-water at root, humid, kindly heated atmosphere, plenty of air night and day, gradually reducing the atmospheric heat as the days decrease. Succession plants in every stage have arrived at the very best part of their growing season, and require previous instructions fully carried out, and the night atmosphere reduced somewhat as the days decrease. The application of abundance of air in maintaining healthiness and a robust growth, abundance of heat, air, and humidity, and no shading, is sure to command all that can be wished. Suckers, of course, should be taken off and potted at once; to grow on, without loss of time or check, is the only way to succeed in always having at command fine, healthy plants, in every stage, at all seasons.

THE KITCHEN GARDEN FOR SEPTEMBER.

BY JAMES BARNES.

CONTINUE to prick out Cabbage plants a few inches apart as fast as they are large enough to be handled. Do not select over-rich land for this purpose, but sweet, healthy, rather poor soil; more particularly for all the late prickings intended to stand the winter, in order that the plants may not become too soft to stand the winter well. There is no need of having long, crooked, or shanked Cabbage plants that are awkward to handle and take more time to plant than others; besides they are not likely to thrive so well; it is only by thick sowings and neglect of timely thinning that such distorted rubbish is produced. The right time of year, to enjoy pretty little and sweet Cabbages and Coleworts is from September to February, and good spring Cabbages in March, April, and May. In order to have these then, it is necessary to plant timely and thin, keep the ground constantly open and loose by a free use of the hoe. The Cabbage is a wholesome and useful vegetable for every day's consumption, a substitute for which is not easily found. It is also on it we place our greatest dependence in case of Potato failure. Manure, trench, and ridge up in as rough and open a manner as possible the ground from which the Onion crop has been harvested, in order that it may readily receive the beneficial influence of the sun and atmosphere, a rare change for Cabbage if the ridges are cast into 30-inch trenches. When the first batch of pricked-off plants are strong enough, they should be planted on each side of the ridge 15 inches apart. If the ridges are cast 24 inches apart, insert the plants on each side 12 inches apart each way; this brings your plants even 12 inches apart each way; and this distance gives abundant room for pretty-sized early Cabbage, if timely thinning is attended to. The roughly cast ridges will shelter and break the cold winds, and the scarifying down and about the plants as the season advances encourages a healthy sturdy growth, a practice everywhere to be observed. The plants placed 2 feet to 2 feet 6 inches apart on flat ground, open to the full exposure of all cutting winds and weather during the winter, by the month of March, when nice little healthy Cabbages should be ready for use, there are only weather-beaten, crippled, and diseased plants, and many quite dead, after a severe winter; while those that are alive have still their growth to make, coming in late, and at a time when other vegetables are plentiful. There is little pleasure or enjoyment in a large or small weather-beaten, sunburnt Cabbage during the long hot summer days when other vegetables should be fully in season, and when caterpillars and grubs are abundant; besides, what is the enjoyment or value of those great, heavy, hard Cabbages that we see so commonly offered for use, and frequently meet with weighed and cut open for competition at our country summer exhibitions, except for cows and pigs? There is a time to be observed every season in the spring months when vegetables are scarce and dear, when they should be abundantly supplied, and most assuredly can be, which I can fully vouch by my own long practice. In many localities it is

distressing to observe the negligent manner in which the soil is cultivated, and the trash it is burdened with, for we often see lumbering slow-growing wild leafy Cabbage, not far in advance of our native wild Cabbage, to be found growing round our coast. Plant out with Coleworts any spare ground you may have, and continue to use the hoe frequently amongst them.

Cauliflower is another most valuable and useful vegetable. Here again many mistakes are made in sowing and after-management. Many sow the Cauliflower, to protect by frame or hand-glass throughout the winter, in August and September, commanding fine strong plants, which invariably get checked by severe weather, or get too soft by early spring when planted out. Thus all the time and attention bestowed on them are lost, the season also is lost, and disappointment the sure result. Instead of filling a gap in the right season, a blank is left. My own practice was to sow for preserving in frames during the winter in the first week of October. For this purpose, fill up some old frame, till within a few inches of the top, with old frame linings or half decayed leaves, placing on the surface two or three inches deep of sweet pulverized open soil, on which sow the seed, pat down with the back of a spade, and cover them by sifting over the whole surface a very little dry sandy soil. Then place on the lights, to ward off heavy rains, but at the same time keep them tilted up a little. The seed appears in three or four days, when the lights should be entirely removed throughout the day and a net placed over the frames to prevent the ravages of birds. Commence pricking off the plants, as fast as they come up, into other frames, close to the glass, on sweet healthy soil not too rich. Keep the soil stirred almost daily amongst them, to keep an open dry surface. Should they get caught in rains or heavy fogs while the lights are off them dredge with dry wood ashes, if there is the least sign of mildew. Encourage the growth of the autumn and winter growing crops by surface stirring. Dwarf French Beans of good favourite sorts plant now in succession, in Cucumber and Melon pits and frames, for an abundant crop in October and November. Attend carefully to timely earthing up Cardoons on dry days to bleach. Earth up Celery in every stage, and put out the last batch, to come in next March and April, pretty thickly in deep trenches, in order to be able to protect in severe weather; these will come in next March and April. All young growing crops of Carrots intended to stand the winter should enjoy a well hoed and healthy surface, not giving a weed or slug a chance to appear. Take up the first batch of Chicory roots to place in the Mushroom-house, or some temperate dark place, to bleach. Make the last sowing of Chervil in a warm corner to stand the winter. Curled and common Cress and Mustard should be sown frequently, but in small quantities. Continue to plant out Endive in succession; choose dry days for tying or covering or lifting to the cellar or dark shed to bleach. Earth up, and make the last planting of Leeks this month for spring use. Of hardy brown Egyptian and Bath Cos Lettuces make the last sowing, also of hardy Cabbage kinds in a warm sheltered corner, and continue to plant out pretty fully for winter use. Make the first sowing of the White Cos in frames, close to the glass, the last week in this month, choosing poor but sweet healthy soil with a good mixture of fine stiff loam and some old mortar rubbish, as a slow stubby growth should only be encouraged. A luxuriant growth at this season is sure to end in canker, mildew, and hasty destruction. Next month is the proper season to give instruction about sowing, planting, and care taking of winter Lettuce in various stages. In the case of spring-sown Onions, where not already secured, attend to last month's instructions. Onions lately sown, and now up, and having the least appearance of mildew, should be dressed with dry wood ashes; sift also amongst them dry loam and old mortar. Sow Radishes in variety on warm borders this month, and make the first sowing in frames or pits close to the glass in the last week of the month. Winter Spinach, if sown and attended to as directed last month, came up kindly and regular, and should have been duly thinned and hoed before this time. If any signs of canker appears just under the crown, a disease often destructive to the winter crop, apply timely dredgings of hot air-slaked lime. Encourage the ripening of Tomatoes by placing in front of them any spare pit or frame lights, or even thatched hurdles by night will greatly assist them, and keep off early frost. Late crops of Turnips encourage by repeated hoeing and slight dredgings of ashes; a little guano mixed with the ashes once will do good. Sweet Basil and Sweet Marjoram when in full bloom should be cut or potted while quite dry, tied into small bunches, and hung up to dry gradually. As soon as dry place in paper bags, and store for winter use in a dry room or cupboard. This has been the finest season for cultivation, and abundance of every kind of vegetable, with little trouble, I ever remember; and if people who have land have not secured abundance for winter use, and in variety too, it must be their own fault.

THE GARDEN.

“This is an art

Which does mend nature : change it rather : but
THE ART ITSELF IS NATURE.”—*Shakespeare.*

PUBLIC PARKS AND RECREATION GROUNDS.

BY NOEL HUMPHREYS.

AFTER seeing, or even reading a description of, the grand Californian park, which includes the whole of the famous Yosemite valley, with its matchless waterfalls, its stupendous rocks, and its groves of giant Wellingtonias, it is difficult to imagine another People's Park in any degree approaching it in extent and magnificence. And yet, if some of our English glens, and lakes, and mountains, when within short distances of considerable towns, were set apart for public recreation and exercise while it is yet time, before the encroachments of unsightly buildings and other disfigurements destroy the wild graces of nature and ruthlessly brush off the bloom of her charms, we might yet secure public parks which would be remarkable for their natural beauties. The neighbourhood of Sheffield, for instance, is remarkable for its abrupt contrasts of hill and dale, and those well wooded hills and valleys might afford the means of improvising a people's park which would be remarkable in any country; all that is wanted is the grant of some spirited landowner, who might see fit so to dispose of some portion of his territory. Derby should have Dovedale as a public recreation ground for ever, before it is desecrated by the too close approach of tall chimneys, and the other unsightly adjuncts of our great manufacturing districts. Mr. Strutt's gift of the Arboretum, carried out under the management of Loudon, was a noble donation; but the gift of Dovedale would be a still nobler—even if given to the people *by themselves*, through the medium of a self-imposed rate.

Birmingham once had the opportunity of receiving the whole of the Aston Hall estate, with its nobly-timbered park and grand old mansion, for less than she has since given for a small fraction of the park immediately surrounding the old Hall. It was the story of the Sybilline books—the estate was offered to the town at an extremely moderate price, the value of land being low at that time. The town declining the purchase, half the property was sold for building ground. The remaining half was then offered to the town for the sum originally asked for the whole, for the price of land was rapidly rising. Again Birmingham thought she could not quite afford it, and most of the remainder, on the Birmingham side, was also let as building land, to be covered with inferior streets. At last the fine old Elizabethan mansion, with only a few acres immediately surrounding it, was again in the market. Birmingham at last plucked up courage—determined to have the last of the Sybilline books—and paid the price for it which might once have purchased the whole. Other great towns should take warning by this catastrophe, and secure noble recreation grounds while it is yet time, for land is getting scarcer and dearer every day.

Bangor might have found itself in a worse position than Birmingham, and never have possessed its beautiful mountain park at all but for the timely munificence of Lord Penrhyn. The land of his estate near the town of Bangor was rapidly letting for building, which was already beginning to creep up the flanks of its overhanging mountain, covering up the hoary lichen of the grand old rocks with mean and vulgar tenements, for which were cleared away the purple Heather and golden Furze, thus creating prosaic prose, where there had recently been the wild poetry of nature.

Before these profanations were perpetrated to their full extent, Lord Penrhyn stepped in, and secured the whole Bangor side of the mountain to the town as a recreation ground for ever, on the annual payment of the trifling fine of half-a-crown.

This mountain park of Bangor is, indeed, a noble recreation

ground for the people. It has been objected that it is, comparatively speaking, inaccessible to the infirm and aged, and anxious mothers complain that its precipitous rocks render it a very dangerous playground for children; but to the young and strong, who make nothing of the steep zig-zag roads which lead up to the green table land of the summit, it is a delightful and healthful resort.

The irregular plain at the top is grandly studded with gigantic masses of naked rock, the lower portions of which, in endlessly fantastic forms, often supply charming natural seats, such as mallet and chisel would only spoil in endeavouring to improve. The views on all sides, except the one where Lord Penrhyn has built a high stone wall as the boundary of his gift, are charming in the highest degree, and it is only to be regretted that his lordship's munificence was not extended a little farther, so as to leave the entire crest of the mountain to the park—placing the boundary wall out of sight or on the eastern slope of the mountain.

Looking nearly west from the rock seat which I had taken possession of, lie the noble waters of the Menai Strait, which separates the island province of Anglesea from the main land of Wales, the fine woods of the great island slopes sweeping down from the steep hill sides to the water's-edge in great luxuriance of growth. To the left lay the harbour with its crowd of shipping, and beyond, in the veiled mists of evening, the wide waters of the ocean. Turning one's glance inland, after a stretch of green and well tree'd meadow land, the houses of the town commence, and their roofs are seen in a long straggling picturesque line, in the midst of which is the low, moss-grown tower of the cathedral, half hidden among the foliage of a grove of trees.

It was there that St. Augustin first breasted the Druidic power of Britain, and overcame it, with the help of Ethelred, and a little of that wholesale murder that seems to have been the only effectual way of establishing new creeds in those unenlightened times. Beyond the town and above it, towards the south, rises the Carnarvonshire bank of the strait, rich in green slopes and woods, and snugly nestling villas, the graceful undulations of which are clothed with rich foliage, and extend far and wide.

To the south-east, as I sat, the grand Snowdonian range of mountains was partially concealed by the objectionable wall before alluded to, but gaining a higher point the view over the peaks of our noble British Alps became very extensive and extremely fine.

I wandered about the heights of this noble mountain park till the last glimmer of the setting sun was lost among the depths of the thick woods of Anglesea, and then came slowly down the zigzag paths in the fast fading light, dreaming fancifully of Derby getting Dovedale for its park, Langollen the Barber's Hill, or Dinas Bran, and such places as Leeds and York fine stretches of moorland, with brawling streams dashing through them among native rocks, thus rescued from the desecrations of foundries, or chemical works, or cotton mills, by a timely protection which may preserve to us refreshing specimens of wild nature close to or within a reasonable distance of most of our large towns.

All that is wanted to make the people's park at Bangor perfect, in its way, is the removal of the boundary wall to the other slope of the mountain, and the creation of a good approach by clearing away two or three squalid houses, erecting at the same time a handsome set of well designed entrance gates.

THE CREEPING FIG (FICUS REPENS).

It is stated in last Saturday's issue of a gardening contemporary that this plant, so useful hitherto in warm stoves and ferneries, withstood 12° of frost in one of the glass houses at Ashridge Park. As this is thought of some interest and importance, it may not be amiss to record that the plant will be found perfectly hardy over a great portion of the United Kingdom. There is a large plant of it growing quite freely on a wall in the gardens at Woodstock, Co. Kilkenny. When I called there on my way home from America, on one of the last days of December, 1870, the plant was one of the most striking objects in the large and interesting gardens there, from the

peculiar gold-bronzy hue that its leaves assumed in the open air. We may, then, venture in many gardens to extend its sphere of usefulness, by introducing it into the hardy fernery, and by using it to clothe walls, tall rocks, &c. It would deserve this if it retained its usual green tone, but as I saw it at Woodstock the colour of the foliage was quite distinct from anything I had seen in a plant before, and very beautiful. I remember bringing some leaves of it to London with me, which were much admired. The leaves, too, were much larger than those grown indoors, and the branchlets in many cases stood forth firmly from the wall. These facts might lead one to suppose it was a different species, had we not so many variations of habit resulting from varying conditions. W. R.

New Park, Dundee.—Although Dundee is already rich in public parks, the authorities have commenced another, about 19 acres in extent, situate on the banks of the Tay, and called the Magdalen Green. To this fine spot an esplanade of considerable length is being constructed, whereby a river-side drive from the docks to the new park will be formed. The esplanade works will cost about £10,000. They consist of an outer sea wall of rough construction, designed to uphold some scores of acres of made-up land lying between the river and the Perth Railway. Forming a fine contrast to this progressing Firth-side Magdalen Park, plain, and esplanade, is the Balgay Park opened last autumn by the Earl of Dalhousie. As the Magdalen Park comprises the fairest of the sea-level land, so the Balgay Park and the adjoining Necropolis, together 60 acres in extent, comprise the loveliest of the hill-tops. The Balgay Park and the Necropolis occupy twin hills on the west side of the town. They are to be connected by a light iron trolley bridge thrown over the gorge between them. The lodges and walks have been designed and laid out in excellent taste. All around, however, the scenery is lovely, free, broad, and boundless, and it will be a mistake to surrender the park too much to the rigid requirements of a garden.

Embellishment of Railway Stations.—We have two pretty station gardens in this neighbourhood—Bury and Stowmarket, the former unfortunately not soon from the line, the latter a thing of rare beauty for all. Every available inch of ground on each side is laid out as flower gardens, where throughout the season a rich display of annuals, bulbs, and other bedding plants may be seen. This has been done for many years, and any passenger with an eye for beauty is on the *qui vive* to have a peep at the station garden at Stowmarket. The example has proved infectious, for at many other stations beginnings are being made. But there is endless room for improvement before these approximate to the perfection of Stowmarket or the railway garden at Yalding, described in one of your late numbers. When this happens a new pleasure will be provided for the travelling public, and a fresh means of culture furnished for the working staff of the railways of the kingdom.—D. T. FISH.

Tea Culture in India.—At the last general meeting of the Assam Tea Company, it appears that the total receipts for the past year had been £126,513 7s. 9d.; the expenditure £86,556 16s. 10d.; and the net profit to be divided £39,956 10s. 11d. When it is remembered that tea cultivation and preparation in India are of very recent date, and that for many years the whole enterprise was a mere experiment, the wonder is that such success should have attended the efforts of this company. At the same time, the known superiority of Indian tea over every other growth, and the preference of Asiatics for the beverage, readily accounts for the rapid progress of this important form of industry. Before Indian tea had been thought of, the produce of China had an enormous sale in Hindostan, but the native article has now almost entirely supplanted it, especially in the North-West and adjacent countries.

The Weather in May last.—Mr. Meehi affirms that "on the 20th of May last there were 7° of frost" in England. Seeing this unqualified assertion, Mr. Allnutt says:—"I turned back to my diurnal notes of that month, and found, in reality, that May does present a most ungenial aspect, and a temperature for the space of three weeks abnormally low, but there was only one instance when the thermometer sank below the freezing point. On the night of the 12th it certainly did fall to 30°. On the preceding night it stood at the *minimum*, 32°, and on the 19th at 33°, but on the day in question (the 20th) the night, morning, and afternoon temperature respectively was 33°, 42°, and 50°, making the diurnal mean 41° 6', and 11° 5' below the temperature of the same day in fifty years. On the 18th, the coldest day, the mean was 13° 3' below the average, and on the 19th 11° 5' in default. On the 11th and 12th heavy snow-flakes mingled with the rainfall, and, altogether, the weather was incontestably frigid, but there was no period, even on this high ground, when the thermal conditions manifested anything approaching the inclement temperature of 25°, as stated by Mr. Meehi."

NOTES OF THE WEEK.

— A MOVEMENT has been started in Stratford, says the *Builder*, in favour of converting West Ham Park into a place of public recreation. It is stated that the land can be purchased for 20,000*l.* A committee has been formed to raise a fund for the purpose.

— THE American Pitcher-plant is thriving as well as any native plant in the bog garden in Messrs. Backhouse's Nurseries, at York, and by its side a healthy little specimen of the still more curious *Darlingtonia californica* is beginning to grow freely.

— WE learn from Mr. Smith, Vice-Regal Lodge, Dublin, that the Potato disease has attacked *Solanum laciniatum* growing in the gardens there, and that all that kind will have to be pulled up. Singularly enough, such species as *S. robustum*, *marginatum*, and others growing alongside of it, and intermixed with it, are unaffected. *S. laciniatum* is a fast-growing New Holland kind, and very useful for furnishing beds quickly in cold situations.

— WE may expect something good in the way of *Cyclamen* next spring, if we may judge from present appearances. Mr. Wiggins, Worton Cottage, Isworth, has nearly fourteen hundred seedlings in various stages of growth, all of which are expected to produce blooms this year. The strongest of them are grown out of doors in pots, placed on slates or wood to prevent the ingress of worms; others are in airy frames and cool houses, and all are syringed twice a day, and otherwise receive liberal supplies of water.

— THERE has recently been formed at Amiens, says *Nature*, a society calling itself "Société Linéenne du Nord de la France," having for its object the study of all the branches of natural history in its wide sense, divided into three sections—zoology, botany, and geology. The society will hold general meetings of sections, and during the favourable season will make excursions for the purpose of exploring the surrounding region. It intends to publish annually a volume of memoirs, and a monthly *Bulletin des Sciences Naturelles*.

— THOSE who argue that you must have "something for the public" in our public gardens, and that that "something" had certainly better be composed of a most telling display of *Geraniums*, *Calceolarias*, &c., might learn a useful lesson in Battersea Park just now. There, on crowded evenings, the fern glades, and one or two of the spots in which the most artistic (and at the same time the most natural-looking) gardening is to be seen, are objects of interest to dense crowds. The fact is the "public" can appreciate something better than the sanguinary style—when it has the opportunity, which is not often.

— THERE is surely some inaccuracy in the paragraphs of our morning contemporaries as to the Upas tree the French are said to be expecting from Madagascar, particularly as regards the "grass plot," which we are told is being prepared for its reception. A Madagascar tree on a Parisian grass plot in winter would be a hapless subject indeed. Perhaps the tree is a dead one. Most of the botanic gardens of Europe have long possessed specimens of the Upas tree, not on their grass plots, but in their stoves.

— M. JEAN SISLEY recommends the application of the bichromate of potash to the manufacture of cheap garden frames, cloches, &c. These, he suggests, may be formed of papier maché, which has been made with a solution of the bichromate in glue, in the proportion of one part to fifty. The substance is thus rendered perfectly insoluble in water, and would consequently resist ordinary atmospheric changes quite as well as wood or other material. Its cheapness, and the facility with which it can be moulded into any required form, are points which are deserving of attention. The paper umbrellas of the Japanese, which are perfectly waterproof, are prepared in this manner.

— OF the different forms of *Lilium speciosum* (*lancifolium*) there is a magnificent display just now in Messrs. Barr & Sugden's trial grounds, Footing. There the difference between *L. rubrum* and *rosenum* can be distinctly observed, the former being much darker both in leaf and stem than the latter. The flowers of *rubrum*, too, are generally the deeper marked of the two, a distinction, however, not always constant, and therefore we must fall back on the darker hue of the stems and leaves, when we desire to accurately determine which is *rubrum* and which *rosenum*. *Punctatum*, which is a very pretty species, may be readily distinguished by its yellow anthers. The white kinds are evidently varieties of the foregoing, *s. album* being pure white, and each of the petals tinged on the back with purple. There is yet another variety which may be known by its pure white petals, both above and below, and also by the pale green colour of the stem and leaves.

— A PLANT of the Glory Pea (*Clianthus Dampieri*), is now flowering trained against a low wall in the Royal Gardens at Kew.

— AMERICAN papers state that the "Cabbage Butterfly," (*Pieris rapae*) has made its appearance in such alarming numbers in Pennsylvania, that the Cabbage crop, notwithstanding the lateness of the season, is threatened with ruin.

— Mr. JAS. BACKHOUSE has lately been effecting some very remarkable improvements in his already famous rock-garden at York, and is now busy on a colossal work of the kind in his own private garden. When finished this will, we apprehend, prove the most perfect and artistic artificial work of the kind ever attempted.

— LAST week two children, aged 6 and 3 years respectively, died at Mylor Bridge, near Falmouth, from eating fungi, mistaken for mushrooms. The mother, Mrs. Jenkin, a younger child, and the servant, who also ate some of the fungi, are still very ill, but hopes are entertained of their recovery.

— A VIOLENT tornado passed over Philadelphia on August 6th. It was accompanied by vivid lightning, loud peals of thunder, and a tremendous downpour of rain. Trees were blown down, and houses and churches unroofed. No loss of life is reported, but the damage to property throughout the city is immense.

— FRENCH horticulturists, we understand, propose to "stamp out" the Phylloxera, like the rinderpest, by destroying at once all infected vines. From the capricious manner in which the disease crops up here and there unexpectedly, we very much question the success of this measure. The appearance of the Phylloxera in our English vinerias has never been satisfactorily explained on any of the known principles of the transmission of infection.

— THE sum total of the losses sustained by the nurserymen and florists in the neighbourhood of Paris during the siege has been declared before the commission of enquiry to amount to 2,838,542 francs, or £113,541. This sum represents the amount of what was in most cases the wanton destruction inflicted by the Germans on property of this kind in the twenty-one communes which were occupied by them.

— SEVERAL correspondents have called attention to the fact that this year resembles that of the Potato famine in the frequency of thunderstorms. The interval between July 20 and August 10 is set down as critical in the life of the Potato plant, and it is suggested that it may then be more susceptible of atmospheric disturbance than at other times. It is thought that if by July 20 the Potato is either ripe or vigorous, it is out of danger, but not if it has to make its chief development after that date.

— THE north bank of the Thames is being wonderfully improved at Chelsea. The new Portland stone embankment has been so far completed that the coping stone is on for a distance of about two hundred yards. The embankment is brought so far into the river that the lowest of tides will not reveal the mud bottom, so great an eyesore heretofore. The new Albert Bridge from the Cadogan Pier is now advanced to the midway of the river. When finished it will be one of the finest and handsomest bridges that span the Thames.

— WE find in the *Echo* the following statement made by an Anglo-Indian officer:—"An acre of Bananas is said to feed more people than the same quantity of any other kind of food. To be sure they thrive best in Central Africa, but we had some days this summer quite hot enough to ripen them. Could they not be tried in a corner of Hyde Park?" A wonderful suggestion this! If ever carried out, let us hope that Pine Apples may be planted among the Bananas as undergrowth.

— WE understand that the Salway Peach may now be seen in great perfection in the gardens of Mr. James Blyth, Woolhampton Park, near Reading. Mr. Colborne, the gardener, finding that the tree, which was at first planted out of doors, did not thrive when exposed, placed it under glass, and with such success that in no year since has it yielded less than from 500 to 700 Peaches, which have come to perfection after other varieties have disappeared. The finest of the fruit weigh 12 ounces and 14 ounces each, and the estimated value of the yield this year is about £25.

— It will be seen by an advertisement in another column, that the Royal Horticultural Society intend to hold a great International Exhibition of fruit at South Kensington on the 6th of next November. All home and foreign growers of fruit are invited to compete. Ninety prizes, varying from 10s. to £3, are offered in addition to four gold and four silver gilt medals, forming a sum total of nearly £90. The medals will be given for the following: the most complete collection of Grapes, two bunches of each sort; the most complete collection of dessert Apples, three fruits of each sort; the best collection of culinary do. three fruits of each sort; and the best collection of dessert Pears, three fruits of each sort. Though a very unfavourable year for fruit, these inducements will doubtless secure an interesting exhibition.

GARDENING ROUND LONDON

(DURING THE PRESENT WEEK.)

BY OUR SPECIAL REPORTER.

PRIVATE GARDENS.

The Flower Garden.—*Gladioli*—still everywhere in bloom—should have their flower-stalks removed as soon as they have assumed an untidy appearance. The whole stem, however, of such as are among tall growing plants is not cut over; on the contrary, it is only shortened down to the level of the other plants. Japan Lilies, although past their best, are nevertheless yet very ornamental, as are also *Tigridias*, especially *T. conchiflora*, which seems to be growing and flowering better this year than usual. In order to prolong the beauty of *Antirrhinums* the strong shoots are pinched off, an operation which induces them to throw up side shoots, each of which furnishes a flower spike. Cuttings of *Verbenas* struck in frames in July and the first week in August are being lifted and planted pretty thickly in boxes 4 inches deep, in a compost of good loam, leaf-mould, and river sand; some of them are also potted singly. To have established well rooted plants before winter sets in is a point worthy of being secured, for in that condition they stand the winter better, and start more freely in spring, when submitted to a brisk temperature, than plants not in so good a state could possibly be expected to do. *Pelargoniums* from the open border that are well rooted are also being potted off or put into boxes. As regards *Calceolarias* and *Gazanias* these do better struck in October than at any other time. All annuals as soon as they begin to put on a withered look are removed. Such kinds as are wanted for seed have their stalks cut over and are hung up to dry for a time before the seed is harvested.

Hardy Bulbs.—The best time for planting these is in October and the first week of November. If, however, it should be necessary to plant earlier, a border in the reserve garden may be prepared for their reception; but the only advantage gained by such early planting is having the roots in the ground. In preparing the border for them, give it a good dressing of chopped dry cow-dung, such as may be collected in a grass field, and work the ground deeply, taking care that it is well drained. A sprinkling of sharp river sand should be placed under and over the bulbs, which should be kept about 4 inches beneath the surface of the soil; and towards the end of November, or as soon as severe weather may be likely to set in, a mulching of a few inches of litter on the tops of the beds serves as a protection from frost. As regards pot culture, it is not necessary to keep too many in pots, for such as are wanted for late work can be lifted from the open borders any time in the spring, and by a little careful treatment may be had in flower some time before those remaining in the borders. Seedsmen generally have now got in their stock of bulbs; and it is a mistake to delay purchasing too long, for all kinds of bulbs are safer in the soil or snugly quartered at home than dried in hags, drawers, or on shelves in shops.

Conservatories.—*Lapagerias*, which are perhaps the most beautiful inmates of these structures at present, require abundant but judicious waterings, and slight shade from strong sunshine. *Zephyranthes rosea*, a pretty bulbous plant, is now, both in and out of doors, in great beauty, and *Paucratiums*, and even *Crinum*s now in bloom serve also to decorate the warmer corners of conservatories. A few *Odontoglossums* and *Oncidium*s likewise contribute to their effect, besides a host of other hardier flowering and fine foliaged plants. *Camellias* in pots are now set out of doors, where they can have a little shelter, and not be quite under the full blaze of the sun. Some are being inarched by securing small pots containing the stock in such a way that the scion may be easily reached; damp moss is tied around the part above the ligature so as to prevent sudden changes of temperature. *Cyclamens* demand particular attention just now; some of the young ones are being repotted, and are kept either in frames or are placed on wood or ashes out of doors, and syringed twice a day. Cape *Pelargoniums* are being repotted; old plants are turned out of their pots, the soil is shaken from their roots, and they are again repotted into the same sized or perhaps a less sized pot, according to the strength of the plant, using a compost of good loam and leaf-mould, and a plentiful admixture of river sand. Plants of *Cyperus alternifolius* intended for decoration throughout the winter months are being repotted into a compost of yellow loam, a little fibrous peat or leaf-mould, some chopped sphagnum, silver sand and finely broken crocks. The plants are then kept in a moist, warm temperature for a time.

Stoves.—*Rivinas*, both red and yellow berried, are now very ornamental. Some of the *Franciscas* are still in bloom, as are also *Gastronemas*, *Gomphias*, *Amaryllis reticulata alba*, &c. The chief beauty belonging to our stoves, however, is to be found in the many noble foliaged plants and fine ferns which they contain. *Gloxinias* and *Gesneraceous* plants out of flower are set in cold frames, where they are kept dry. Some of the *Ardisias* are now prettily laden

with berries; others, particularly *A. villosa mollis*, on the other hand, are in flower, and the plants are removed to a drier atmosphere for a time, until the fruit has set, when they are again placed in a moist heat. The finer kinds of ferns still receive a little shade, in order to preserve their colour. Stems of tree ferns lately imported are wrapped round with damp moss, which not only prevents such a frequent use of the syringe as would otherwise be necessary, most likely to the injury of the surrounding plants, but also obviates sudden vicissitudes of temperature. In order to promote a stronger growth in *Masdevallias*, they are in some instances placed in glass cases in the *Odontoglossum* (or cool Orchid-house, but plenty of fresh air is given them. The supply of water is being gradually lessened to the majority of Orchids, as is also the atmospheric moisture. Shading is likewise to a large extent dispensed with.

Indoor Fruit Department.—The wood in the earliest vineries is now quite ripe, and a liberal circulation of air is maintained day and night. To the second early vinery air is also freely admitted; but to those in which the wood is not yet quite ripe a little fire heat is given in dull weather. Suckers of Pine-apples are potted as soon as possible, using good turfy loam only, mixed with a little charcoal; no water is given until they begin to emit roots. To Fig trees swelling fruit a good supply of weak manure water is given, though it is gradually lessened as winter approaches. Melons are, for the most part, out, but where there are some yet to ripen additional heat is given by renewing the linings, &c. Cucumbers in pits are well syringed at midday or early in the afternoon. Mushroom beds in pits, cellars, or similar places are spawned as soon as their temperature decreases to 85°. Kidney Beans are sown in 6 or 8 inch pots, half filled with a good rich open compost, leaving the other half to be made up when the plants come into bloom. The syringe is freely used amongst their leaves, to keep down red spider.

Hardy Fruit and Kitchen Garden Department.—Fruit rooms which have been thoroughly cleaned are now being filled with fruit as it becomes ripe, and their temperature is being kept as even as possible. Celery is being earthed up, and good soakings of liquid manure are given to it occasionally. Vegetable Marrows grown on dung heaps are being thinned a little as they become too thick; no fruits are allowed to ripen unless such as are required for seed. Every means is adopted to ripen Tomatoes grown on walls or the open air; sashes are set in front of them, and mats or wooden covers placed so as to prevent cold or rough winds from injuring them. The Onion crop is being harvested, and Leeks earthed up. Cardoons are also being earthed up. Young Cabbage plants are being pricked out into warm borders about from 4 to 6 inches apart each way. Some of the strongest are being planted out on ground from which Potatoes have been lifted. Spinach is being thinned out a little, and the hoe used freely amongst that sown in lines. Endive is blanched as required for use, some of the kinds being tied up for that purpose, whilst others have a slate, board, old mat or pot, placed over them to blanch them.

NURSERIES.

Indoor Department.—Painting and otherwise repairing the various plant structures is at present occupying attention, operations which cause a good deal of trouble, as all the plants have to be moved from such houses to others, and afterwards put back again. Plants of *Anthurium Scherzerianum* are being divided into as many parts as will make good plants and potted in a compost of rough fibrous peat, sphagnum, and silver sand. They are then placed in a moist stove. Although this *Anthurium* may be obtained true from seed, the seedlings take about three or four years before they become anything like good flowering plants; it is, therefore, generally advisable to increase it by division, as flowering plants can by that means be obtained in a much shorter time. Some object to dividing their plants so late in the year as this, but of some hundreds so treated a month later than this last season in Messrs. Hendersons' Nurseries, only one plant failed, all the others being now in a flourishing condition. *Peristrophe angustifolia* is being increased by means of cuttings; and such as are already rooted are being potted off and kept for a time in a close, warm, and moist temperature. Rooted cuttings of *Gardenias* are also being potted and treated similarly, and those potted off from the cutting pans about two months ago are being shifted from the thumb pots into which they were put into large or small 60-sized pots, according to their strength. *Crotons* are being increased by cutting off the tops and inserting them, either singly in small pots, or a few together round the edge of 4-inch pots. Their leaves are tied up, and to some of the long slender-leaved kinds the support of a neat stake is given. *Sonorila Margaritacea* is increased both by means of cuttings taken off in the ordinary manner and also by means of rooted pieces that had been layered or fastened to the surface soil with small pegs. In propagating the *Stephanotis*, a good well-

ripened shoot is removed and cut into as many pieces as there are joints on it. These joints having opposite leaves, the several bits are cut up through the middle longitudinally, thus what would otherwise be only one cutting is converted into two. Only one eye is retained to each, but there is a piece of wood above and below it; the eye is not buried, it merely touches the soil, and is held firm in its place by the piece of wood below it. A leaf is also retained to each eye. *Ixoras*, *Hibiscus*, &c., are likewise increased from cuttings; as are also *Clerodendrons*. *Begonias* are being raised from seed in great quantities, and when fit pricked off into pans nearly an inch apart; when they begin to meet in the pans they are potted off singly. *Periskia* stocks are set on shelves close to the glass in cool houses; some graft a few just now, but the time generally preferred for such work is spring. *Camellias* are being grafted, using seedlings of the common single red as stocks. The grafted plants are then kept in close frames in the hard-wooded propagating pit. Chinese *Primulas* are now being raised from seed and also from cuttings. They are kept in the soft-wooded propagating houses, and are well shaded for a time, especially cuttings; the temperature they require is only that of an intermediate house.

MARKET GARDENS.

Frame Cucumbers are now all but over for a season, what few still remain good have double sashes placed over them, using those from spent frames for the purpose. Plants in pits, with the assistance of plenty of heat, moisture, manure water, and a free use of the syringe, are still bearing pretty well, but their season even will soon be past. Those who grow Cucumbers in pits generally clear them out in October, to make room for *Pelargonium*, &c., struck out of doors in early August or in July. The manure laid in the trenches in the bottom of the Cucumber frames in spring is now being turned out and either used as a foundation for Mushroom beds or for other purposes. Vegetable Marrows are still growing and fruiting satisfactorily; indeed, this season has been a very suitable one for this crop, and consequently the yield has been abundant. Chilies are kept in warm pits; they have been bearing well for some time, and still promise to do so for a few weeks yet. Any blooms that may now come forth are picked off. Tomatoes have been plentiful this year, and although the present weather is not very favourable for ripening them, scores of bushels of ripe fruit are being gathered weekly from the open ground, not from walls. To the earliest Celery crop a good second earthing is being applied, leaving a hollow drill along the centre for the retention of water, which is contributed in the most liberal manner, notwithstanding the character of the present season. Never have we seen Celery in finer or in a more advanced state at this season than the first main crop in this year, and as yet the plants do not attempt to "run." They are grown in single lines in ridges from 4 feet to 6 feet apart, and from 8 inches to 10 inches plant from plant in the row. All the succeeding crops have also been earthed up a first time, except some planted only a few weeks ago; indeed it is a difficult matter to get the Coleworts used as catch crops off the ground in time. Some Mushroom beds have been made up; the earliest of them, now that the temperature has decreased to between 85° and 90°, are spawned. A good many have yet to be put up; they are, however, being proceeded with as time permits. Coleworts planted between lines of Roses, fruit bushes, and Celery, are being removed for market as they become fit. Beds of young Cabbages sown in the end of July or first week in August are kept clean, and the soil well loosened by means of a short-handled 2-inch hoe. The result of this kind of treatment is strong, healthy, stubby plants, which will lift with nice roots, and when transplanted will grow away unchecked, provided the weather is favourable. The earliest crops of French Beans are being cleared off, and Coleworts that were grown between the lines sent to market, the ground being now manured, deeply dug, and held in readiness either for Cabbage planting or for Cauliflower sowing. In most of the gardens a sowing of Cauliflower has been already made. Main sowings of winter Onions are being thinned, whilst others are only just appearing above the surface of the soil. Rhubarb leaves are still being collected and sent to manufactories for preserve-making. Endive is being bleached as it becomes ready. The Onion crop is being stored in dry lofts, to the roofs of which herbs are hung up in bunches.

We learn from the American papers that remarkable success has lately attended the culture of tobacco in the northern state of Connecticut; the quality is so fine that as much as three and even four shillings per pound is sometimes realised for it, so that the growers are making their fortunes. The secret is simple enough, and is indeed no longer any secret. It is merely to take poor soil, say of half-sandy half-gravelly loam—anything of a generally poor and "leachy" nature—and fill it with stable manure. On such worthless soil, properly broken and made fine, the highest priced tobacco is grown.

THE LIBRARY.

ESSAYS ON NATURAL HISTORY.*

To those who have passed many a pleasant hour over "Jesse's Gleanings in Natural History," this volume is destined to prove a welcome acquisition. Written much on the same plan, but with a far wider range of experience, it discloses what a world of interest, unobserved by the thoughtless wandering crowd, lies within the reach of any who will be at the trouble to approach and explore it. Our hot, high-strung, artificial life in cities, with all its miserable illusions and short-lived and unsatisfactory enjoyments, tends, in its very nature, to vitiate the natural and wholesome appetite for investigation into the wonderful adaptations and economy of the lower families of animal and vegetable existences; but if charm of descriptive power, confidence in the authority of him who speaks, or even a remote suspicion that there may be "some things in heaven and earth" which have not entered into our "philosophy" are sufficient inducements for the perusal of a book, then we can, in all good faith, say that we have seldom met with a more delightful and instructive work than the subject of our present notice.

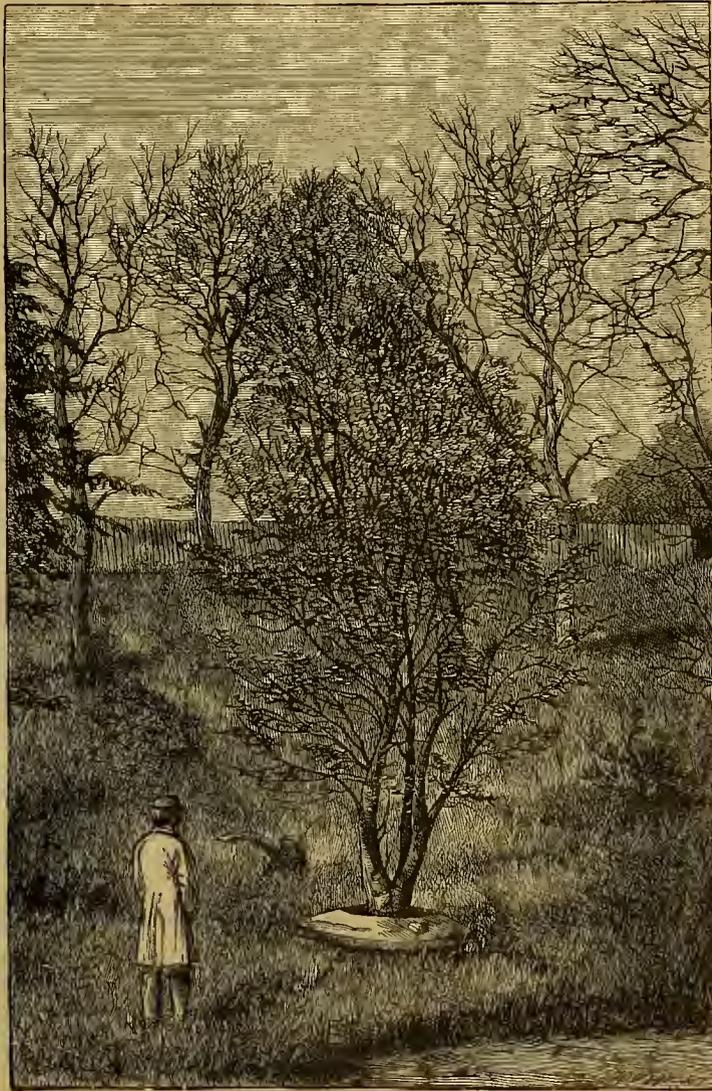
The account of Waterton's life which fitly introduces these Essays is, to a great extent, from his own hand, and gives a very full and pleasing history of his career, while at the same time it is remarkably free from the egotism which is apt to pervade an autobiography. The striking or amusing incidents which came under his notice in the course of his travels are here detailed in the same animated style which distinguishes the pages of his earlier "Wanderings"; while the acute and accurate observation, the ardent love of Nature, the bold spirit of exploration, and the strong desire after truth which inspired Waterton in all his researches into the subjects to which he had devoted his life, are manifested throughout these Essays. They are the faithful records of years of careful study of the habits of our native birds and animals, for which Waterton had unusual facilities in the extensive and well-enclosed grounds of Walton Park. The complete protection here afforded induced many rare visitants to take up their abode inside the sheltering walls, and to exhibit towards the benevolent proprietor much of that confidence which bird and

beast have ever shown towards man, ere they have learned the bitter lesson of persecution at his hands.

Each essay is complete in itself, as regards the subject of its notice, differing in this respect from the plan of White's "Natural History of Selborne," which is rather a trustworthy calendar of notes and observations, and of necessity somewhat fragmentary in its teachings, however valuable as an authentic record of the Fauna of the district. There is so much in these essays that we could quote, that we prefer to direct our readers to the book itself, well assured that it will afford them as much pleasure as we have ourselves experienced in looking through it. The subject of one paragraph, however, is so novel and surprising that we are tempted to give it as an extract, with its accompanying illustration.

THE POWERS OF VEGETATION.

In those good days of old, when there were no corn-factors in England to counteract that part of our Redeemer's prayer, "Give us this day our daily bread," by hoarding up vast stores of grain, until mouldiness and vermin have rendered it unfit for the use of man, there stood at Walton Hall a water-mill, for the interest of the proprietor and the good of the country round. Time, the great annihilator of all human inventions, saving taxation and the national debt, laid this fabric low in ruins some sixty years ago; and nothing now remains to show the place where it once stood, except a massive millstone, which measures full 17 feet in circumference. The ground where the mill stood having been converted into meadow, this stone lay there unnoticed and unknown (save by the passing haymaker) from the period of the mill's dissolution to the autumn of the year 1813, when one of our nut-eating wild animals, probably by way of winter store, deposited a few nuts under its protecting cover. In the course of the following summer, a single nut having escaped the teeth of the destroyer, sent up its verdant shoot through the hole in the centre of the prominent millstone. One day I pointed out this rising tree to a gentleman who was standing by, and I said, "If this young plant escape



Nut Tree uplifting a Millstone.

destruction, some time or other it will support the millstone, and raise it from the ground." He seemed to doubt this. In order, however, that the plant might have a fair chance of success, I directed that it should be defended from accident and harm by means of a wooden paling. Year after year it increased in size and beauty; and when its expansion had entirely filled the hole in the centre of the millstone, it gradually began to raise up the millstone itself from the seat of its long repose. This huge mass of stone is now 8 inches above the ground, and is entirely supported by the stem of the nut tree, which has risen to the height of 25 feet, and bears excellent fruit.

Strangers often inspect this original curiosity. When I meet a visitor whose mild physiognomy informs me that his soul is proof

* "Essays on Natural History." By Charles Waterton. Edited, with a life of the author, by Norman Moore, B.A., St. Catharine's College, Cambridge; with Portrait and Illustrations. London: Frederick Warne & Co.

against the stormy winds of politics, which now-a-days set all the world in a ferment, I venture a small attempt at pleasantry, and say, that I never pass this tree and millstone without thinking of poor old Mr. Bull, with a weight of eight hundred millions of pounds round his galled neck; fruitful source of speculation to a Machiavel, but of sorrow to a Washington.

GARDEN DESTROYERS.

THE NEW VINE PEST.

(PHYLLOXERA.)

(Concluded from p. 218.)

OUTWARD AND MORE VISIBLE EFFECTS OF THE ROOT DISEASE.

As long as the insects are confined to the more fibrous roots which, in a measure, are renewed each year, the vines show no decided outward signs of the malady, which may then be considered in its incipient stage. As they become multiplied and fasten on to the larger roots, their work becomes more visible in a sickly yellowish appearance of the leaf, and a reduced growth of the vine is the result. As the roots waste away these symptoms become more acute, and at this stage of the disease the lice have generally left, so that when the vine is about dying it is often difficult to find any trace of the cause of death. On the rotten roots little eight-legged mites are frequently met with, and they are also to be found in the galls. They may always be distinguished from the true lice by their white or dirty-white colour. The insect should be especially watched, as it is apt to be most troublesome, on poor, gravelly, or clayey soils. In deep rich soils I think there is less danger. In France it has been found to be less troublesome on sandy soils. In examining the vine roots this fall in some parts of Northern Illinois, where sand formed a prominent portion of the soil, I found very few root-lice, except on *Cordifolia* and *Riparia* vines, whose leaves had been covered with galls. Even on these the general healthfulness of the roots indicated that they had not been infested during the summer, and that the lice had all come from the last galls of the season. The greater the growth of vine the greater the growth of root, and, consequently, vines that are trained on walls and which thus more nearly approach the wild state, or which are rendered vigorous by a rich soil, are less susceptible to the disease.

REMEDIES.

DESTRUCTION OF THE GALL-LICE.—From what we have already seen, we may justly infer that this insect cannot of itself spread from one vineyard to another without going through the gall-producing phase; and a few galls on the leaves are, no doubt, invariably the first signs of its advent, by natural means, into a vineyard not previously attacked. By natural means, I mean without the aid of man's assistance, by which they are introduced from one place to another on the roots. If these galls, therefore, could only be found and destroyed, it would be one way of effectually heading off the evil; and in a new vineyard a little vigilance in searching for these galls might save much subsequent loss and labour.

DESTRUCTION OF THE ROOT-LICE.—No reliable and cheap remedy, that will destroy all the lice after they have become numerous, has yet been discovered; and the best advice that can at present be given is to guard against the insect's introduction into new vineyards by carefully examining the roots before planting. If knots and lice are found upon them, the latter may be destroyed by immersing the roots in hot soap-suds or tobacco-water. Preparations of carbolic acid have, so far, given most satisfaction. Carbolic acid added to water at the rate of one-half to one per cent. has been successfully employed, and some have by its use succeeded in keeping their vineyards alive and bearing, while those around were destroyed. They use a heavy bar, thickened and pointed at the end, wherewith to make two or three holes, a foot or more deep, around the base of each vine. They then fill these holes with the liquid, which gradually permeates the soil in all directions. A good post-hole auger would work more rapidly, with the advantage of compressing the earth less, but it would do more injury to the roots.

Oil of cade, an empyreumatical oil, which is common and

cheap in France, when dissolved in any alkali (the urine of cows being good enough) and applied in the manner just described, has also given good results. A mixture composed of lime and sulphur boiled in water at the rate of about five pounds of lime and five pounds of sulphur to one gallon of water, and applied when hot, has also been found good. Alkalies seem to invigorate the vines, but do not affect the lice; they are also too costly. Vines on lands strongly impregnated with salt have been found to resist the attacks of the lice. Acids generally are neutralised by the lime which most soils contain. Sulphur has been thoroughly tried without any good results, either upon the leaf-lice or root-lice. Sulphate of iron is of no account. Sulphate of copper destroys the roots. Numerous other chemicals have been experimented with, but with very little or no success, and they are besides not applicable on a large scale. Irrigation and submersion have been pretty thoroughly tested, and it is doubtful, even where they can be employed, whether they have any other effect than that of invigorating the vines, as the lice are, many of them, still found alive after a submergence of months. These methods must be considered conservative rather than curative.

INTRODUCTION INTO FRANCE.

Nothing could be more natural than the introduction of the pest at Bordeaux, where M. Laliman has, for a number of years, been assiduous in the cultivation and trial of different American vines, for the insect has doubtless been imported from America. Or it might have been introduced at the nurseries of the Audebert Bros., near Tarascon, where all sorts of American plants have been cultivated. M. Laliman shows that this nursery has not existed for nearly fifteen years; but this fact does not preclude the possibility of the louse having been first introduced there. It would only indicate—if the spread of the disease can be traced from that point—that it existed in France, without attracting attention, at an earlier epoch than is generally supposed. If I mistake not, M. Planchon, with commendable zeal, has so thoroughly sifted the history of the subject in France that he can trace the first invasion, with tolerable certainty, to a point near this place, Tarascon. It doubtless existed in France a few years before its injuries attracted attention, and the first notice of its work was made in the vineyard of M. de Penarvan, at Ville-neuve-les-Avignon, in 1863. The scourge soon increased and spread, and in 1868 and 1869 acquired such dimensions as to thoroughly alarm the great grape-growing districts of France.

NO NEED OF UNNECESSARY ALARM.

It may not be more easy to cure the disease now than it was formerly, but we are, by understanding its nature, enabled to easily guard against and prevent it. "Full knowledge of the truth," says Helmholtz, "always brings with it the cure for the damage which imperfect knowledge may occasion." The Phylloxera has always existed on vines, and those varieties which in the past have best withstood its attacks will be very likely to do so in the future. The presence of a few lice on such varieties need cause no fear, for the idea of ever entirely exterminating such an insect from the country must be perfectly utopian, and all we can do is to watch and more particularly care for those varieties that most easily succumb. In the future, the vineyardist will be enabled, by the revelations here made, to trace to a definite cause many a failure which has hitherto been wrapped in conjecture and mystery. Only those who have witnessed the fearful havoc it has made abroad—where in three years it caused a loss of 25,000,000 francs in the single department of Vaucluse, France,—can fully appreciate its importance and its power, under favourable circumstances, to do harm.

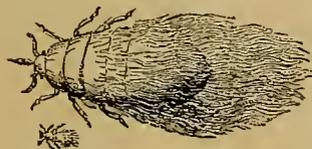
FRENCH EXHIBITION OF INSECTS, BIRDS, &c.

DURING the first fortnight of next month there will be held in the gardens of the Luxembourg at Paris a very interesting exhibition of the birds, insects, and animals which have been ascertained to be useful or injurious to agriculture. Two similar exhibitions have been already held there by the Central Society of Agriculture, under the auspices of the Minister of Agriculture and Commerce. Their importance can hardly be overrated, and we only wish the example were followed in this country. Our farmers and gardeners are sadly in want of a better knowledge of the insect-destroying birds

and animals that are really their friends, and until they are more universally enlightened on the subject, we must be prepared to expect that they will continue to persecute as enemies the weasel, and the shrew-mouse, and the hedge-hog, as well as every bird that ventures to show itself within their precincts. At the forthcoming exhibition not only will specimens of birds, insects, and animals be shown, but each will be accompanied with proofs of its character; the insect with the plant which it attacks or with the plant-attacking insect which it destroys, and the bird or the animal, with the food on which it naturally and chiefly subsists. There will thus be no room left to question the services or the injuries with which each species may be justly credited. The exhibition is open to contributors from all parts of the world, and those who desire to take part in it are requested to notify their intention before the 25th of September, to the Secretary of the Central Society of Agriculture, 59, Rue Monge, Paris, who will furnish them with a programme of the regulations and conditions.

THE WOOLLY APHIS—"AMERICAN BLIGHT."

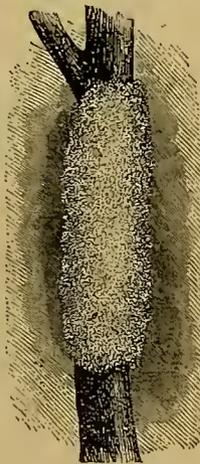
WHEN Dickens was in America, his friends tried to console him during his illness by assuring him that he had a genuine "American catarrh." Gardeners who are the countrymen of the great novelist, think they have a genuine "American blight," and from the talk they make about it in their journals, one would not be surprised to find the introduction of this "American blight" named as one of the offsets to the Alabama claims. The joke of



Woolly Aphis, Woolly Aphis, greatly slightly magnified.

the matter is, that the thing is not American at all, but was known and described in Europe long before it made its appearance in America. This misapplication of names is not strange, for we persist in calling certain nuts English walnuts which do not come from England at all.

The Woolly Aphis, which is the proper name for the so-called American blight, looks so little like an insect, that we do not wonder that we have more than once been called upon to prescribe for mouldiness upon trees. The insect is about the tenth of an inch long, blackish in colour, and producing from its body a mass of long, white, cotton-like hairs. When the insects are congregated, as they generally are, they are quite hidden by these hairs, and the tree upon which they are looks very much as if encircled with a band of mould, as in our illustration. Trees are sometimes so infested by these insects, that at a little distance they look as if they had been whitewashed. Of course only neglected trees can present this appearance. Each of the myriads of aphides has its proboscis fixed in the bark, sucking away at the juices of the tree, and much injury results from their attacks. The insects are very delicate, and are easily killed. Lye, a strong solution of soft soap, brine, limewash, or a mixture of any of these, will destroy them. In this case, as in all treatment of insects, the application should be made at the first appearance of the invader. When the aphids get thoroughly distributed over the smaller twigs and branches, the application of any remedy becomes a very tedious and formidable work.—*American Agriculturist*.



Tree Encircled by Woolly Aphids.

Pear-leaf Saw Flies.—These have been making sad havoc of the foliage of Pears and Cherries this year; two slight doses, however, of Fretingham's Compound appear to effectually destroy them.—*HENRY GADD, Wollaton*.

Thrips and Red Spider.—I beg to inform "Senex" (see p. 199) that I have found Fretingham's Liquid Compound to be an efficacious remedy for these pests. It can be used with the vaporiser without injury on the most delicate foliage.—*HENRY GADD, The Gardens, Wollaton, Nottingham*.

Cossus ligniperda.—One of the most destructive pests to trees is the caterpillar of the Cossus ligniperda moth. This caterpillar lives for three years before it changes to the chrysalis state, and during that time the amount of damage which it inflicts is incalculable, as it is a most voracious feeder, of large size, and armed with a powerful pair of mandibles. The Elm, the Willow, and the Poplar, are the chief objects of its attacks, and a tree speedily perishes on which it has once established itself. In the east of France, where it abounds, and where the Poplar is extensively cultivated, a preventive remedy has been for some time in use, which is said to be quite effectual. This consists in dabbing the stems of the young trees near the base with coal-tar every two years. The coal-tar is laid on in a narrow ring round the stem, and a tree thus treated is considered to be safe for two years at least.

THE GARDEN IN THE HOUSE.

CULTURE OF PLANTS IN ROOMS.

(Continued from p. 207.)

THE PROPAGATION OF PLANTS BY DIVISION, CUTTINGS, AND GRAFTING.

INTRODUCTORY REMARKS.—The advantages of this mode of propagation, especially in room-culture, may be stated as follows:—1. It is the only means of preserving and multiplying special varieties which have been produced by artificial fecundation, of many kinds of plants, such as Fuchsias, Pelargoniums, Azaleas, Camellias, Roses, &c. 2. It is the chief means of propagating many kinds of ornamental plants (such as Dracænas and the greater number of fine-foliaged plants with variegated leaves) which seldom seed when in cultivation, and whose seeds are seldom imported and offered for sale. 3. Specimens propagated in this way bloom much earlier and better than plants of the same kind raised from seed. It is a matter of experience that by this mode of propagation not only the peculiarities of a special variety, but also those of particular parts of a plant are perpetuated. Many timber trees raised from seed produce for a number of years only a growth of wood, and do not show any flower buds until this woody growth has begun to abate with the advanced age of the tree. If cuttings are now made of these fruitful shoots, they will, when their independent growth is established, continue to bloom annually. A similar phenomenon occurs in the case of most Conifers, the branches of which exhibit a development different from that of the main stem. Cuttings taken from these branches will form specimens which preserve the peculiar organisation of the branches, instead of that of the main stem.

PROPAGATION OF BULBOUS PLANTS BY DIVISION, &c.

A bulb is a bud from which either a root stock or fleshy scales are formed. Every individual bulb, whether large or small, gives rise to a young and independent plant. Bulbs, when kept dry in a condition of rest, preserve a considerable amount of vitality. If packed up perfectly dry they may be transported to great distances and, under favourable circumstances, will retain their vitality for one or two years. With respect to their treatment under culture they may be divided into evergreen and deciduous bulbs. Evergreen bulbs are those which, in the usual course of culture, never completely lose their leaves. Such are the various species of Crinum and most of the Pancratiums. These, without any artificial help, form fresh young bulbs, at the bottom of the old ones, from the bud in the axils of the scales. The best time for propagating them is in February and March, when the new growth has commenced. The young bulbs should then be carefully separated from the old ones with a flat and sharp piece of wood, a portion of the axil and of the roots being removed with each bulb. They are then planted in pots and treated like old bulbs. Deciduous bulbs are such as after the ripening of the seeds (or where no fructification takes place at most about two months after blooming) lose all their leaves, and continue for some months in a state of rest. As soon as the leaves begin to wither, whether this occurs in summer or late in autumn, the pots should receive no more water, but the bulbs should be taken up and kept in a dry place until they are again planted. The time for planting them again is when they begin to form new roots, unless it is desired to force them into bloom at an earlier period. Then the soil of the ball of such bulbs as have been allowed to remain in pots is broken up, all dead roots removed, and the young bulbs separated. The latter are planted, several together, in pots or pans, and very little water should be given them before they have begun to push. Deciduous bulbs may be divided into tunicated bulbs, scaly bulbs, knob-like bulbs, and bud bulbs. Tunicated bulbs are composed of several fleshy over-lapping coats or layers, from the centre of which the stem arises. Such are the bulbs of Hyacinths, Narcissus, Scilla, Amaryllis, &c. A great number of young bulbs can be obtained at the loss of the old one, by scooping out the heart of the bulb at the commencement of the new growth, or by making a deep cross-like incision in the crown of the bulb at the time of planting it. In both cases as little water as possible should be given until the young bulbs begin to be formed, in order that the old bulb may not rot. In most cases, however, these operations

are not necessary, as strong bulbs will, without any artificial aid, produce a greater or less number of young bulbs on the inner surface of their coats. Let us, for the sake of illustration, take a Hyacinth bulb after flowering. The outside coat has been removed from the base of the bulb to the middle, and four young bulbs are exposed to view. When the whole bulb has become dried, these can be easily broken off, and may be planted the following season. Scaly bulbs consist of fleshy scales overlapping each other. The bulbs of Lilies are of this kind. Let us for instance imagine a bulb of *Lilium speciosum* just commencing to vegetate. It has divided itself into two young bulbs, and for multiplying purposes may be broken into two parts. With this kind of bulb, also, a number of young bulbs may be artificially produced by scooping out the heart with the new growth. Another mode, very often employed, is, in the case of large bulbs, to cut off the outside coat in such a manner that a part of the stem or central axis may be removed with it, as well as the dormant bud at the bottom in the axis of the scale. This is done with a knife, the point of which is carefully inserted between the scales and pressed downwards, so that a portion of the stem, and, in the case of growing bulbs, some of the roots, may be removed along with the scale. For the reception of these scales flat pans filled with sandy soil should be prepared, or the pans may be partially filled with soil, and on this a layer of sand from half an inch to three-quarters of an inch deep placed. The scales are to be laid flat in the upper part of the soil or layer of sand. When very dry, water should be only sparingly given from time to time, as dryness is conducive to the germination of the dormant buds, and, therefore, only so much water should be given as will prevent the scales from perishing through drought. Besides, if the scales are kept too moist, they are liable to rot. The scales may be removed without the axillary buds. They will then form adventitious buds, from which young bulbs will be developed. However, we do not recommend this process, as it is tedious and uncertain. Knob-like bulbs consist of a strongly-developed bulb-stem, bearing a bulb at its summit. This dies away after flowering, and from the sides of the dead bulb, at the top of the bulb-stem, young bulbs are produced for the next year's growth. These sometimes occur also at the base of the old bulb. The bulbs of *Gladiolus*, *Crocus*, and *Ixias*, are familiar examples of this kind of bulb. Let us now take a bulb of *Crocus vernus* after flowering. At the time of planting all the young bulbs are broken off and planted separately, and at the same time the old bulb-stem may be treated in the same way for the production of young bulbs, as has been already mentioned when speaking of scaly bulbs. Bulb-buds are found in various species of bulbous plants, either in the axils of the stem leaves or between the branches of the inflorescence, or even in the flowers themselves. They break out either accidentally or in some plants (as in *Lilium bulbiferum*), are regularly developed as axillary buds which afterwards change into small bulbs or bulbils. Whenever they are produced in the flowers or in the ramifications of the inflorescence, it is at the expense of the seeds, which in such a case are always abortive. These bulb-buds are to be treated the same as young bulbs when planted. Their development in the plants which produce them is furthered by notching the stem and cutting off the flowers. Bulb-buds will sometimes be produced in the axils of the leaves of the stem of a Lily cut in pieces and treated as cuttings.—*Dr. Regel.*

THE ART OF TABLE DECORATION.

THERE is, says Mr. Fleming (see p. 174), no better judge of table decoration than Mr. Thomson, a fact with which I quite agree, but why Mr. Fleming should be so anxious to assert such to be the case I do not know. The controversy between Mr. Thomson and myself was on one point only, that of the insertion of pots in the table. I have maintained, and I do so still, and with a firmer conviction than ever, that the insertion of pots in tables is not art or decoration in the true sense, and ought not to be allowed to compete. Since I have been to the Crystal Palace Show, where I acted as judge with Mr. Thomson, I have been in different parts of England and Scotland, and have had very many opportunities of asking the opinions of others, and I have found but one in favour of the pot insertion; all the others

deprecated the system very strongly, many most emphatically, and there were ladies of acknowledged taste among the number. I will now answer Mr. Fleming as regards Mr. Thomson. I can say truthfully he is a good judge of these matters. He has an excellent eye for form, colour, and arrangement, and a quick perception of beauty. Our only disagreement was on the one point mentioned, which was overruled, as no statement had been made in the schedule that the insertion of flower pots in the table was inadmissible, therefore we awarded the prize without reference to it. I must here say that the gem of the exhibition was that of Mr. Buster, consisting, if I remember rightly, entirely of cut flowers. Further I think Mr. Fleming's letter is beside the question, when he speaks about house stewards, &c. The judges have nothing to do with anything but what is before them, and being at a horticultural show, have to decide as to the floral portion of the decorations, and not as regards any trouble, expense, or other matters in placing them there. As Mr. Fleming goes on he seems to me to wander further from art, when he says, "Notwithstanding what has been said in the *Telegraph*, I know of nothing more beautiful than a fine head of *Azalea* rising from the table so as to make a mound of bloom without any unsightly vase or covered pot." Now why should he select an "unsightly vase," when there are so many fine things to be had, both in glass and china, and various metals? Some of the best and most charming works of art have been vases, vases especially made to contain flowers, and so constituted as to add to rather than mar the floral effect. I know the weariness of gazing at an *Azalea*, though beautiful in itself, all dinner time. I quite agree with Mr. Fleming that flowers are better than ferns and palms, but they must be cut flowers, gracefully and artistically arranged. There must be mind as well as matter. It is new to me to learn that the tops of our dining tables are now made of deal, nor have I yet come across any willing to have one so made. For my own part I shall do my utmost to get a clause in the schedule for our table decoration, that any tampering with the table will be considered by the judge a disqualification, as I consider it a step in the wrong direction, and the sooner it is put a stop to the better for the art of table decoration.

HARRISON WEIR, *Weirleigh, Brenchley, Kent.*

Glass Flower Stakes.—Window gardeners may perhaps be glad of the following hint. Slender glass tubes, such as are used for chemical purposes, and which can be readily procured at most chemists' shops, make very pretty transparent stakes for pot flowers. They are also inexpensive; I pay sixpence for a length between four and five feet long, and I have no doubt that they can be had for less. The tubes can be readily broken at the length required by previously filing them round. The idea is not my own: I first saw them thus used in Germany, at the house of a professor of chemistry, who had them at hand in his laboratory.—*T. M. K., Ramsgate.*

A Cauliflower Tree.—Two Cockney carpenters, says a Kidderminster paper, who had never before lived out of the sound of Bow Bells, having come to work at Kidderminster, went on Sunday for a quiet walk along the canal side, towards Stourport, with all their senses keenly alive to the novel impressions of nature. Suddenly one of them came upon a well-known Elder-tree covered with its large white umbels in full bloom. Starting with delight, he exclaimed: "Hey, Jim; look yere! aru't this grand! I never saw Cauliflowers a-growing before!"

Burials in Gardens.—Tombstones in gardens cannot be always taken as proof that burials have been made there, as, unfortunately, too many cases occur where the old gravestones of our ancient churchyards have been utilised in repairs to footways, &c.; e.g., in the garden of the principal control officer, Gun Wharf, Portsea, may be found a gravestone with the following inscription:—"Lieut. W. Campbell, obit 1762. 21st Regiment of Infantry." Now this Lieut. Campbell is not buried in the garden in question, but when the ruthless clearance of the old gravestones took place from the burial-place of the garrison chapel a few years ago, poor Campbell's covering stone was amongst them, and was moved with a heap of similar rubbish to the War Department Storeyard, where a due and proper official economy utilised them in patching and repairing footpaths and pavements where necessary. Campbell's stone has a resting place in the garden I have mentioned, close to the greenhouse—as pleasant a site as can be desired; but where his bones are is another question.—*H. Hall, Woolston, Hants.*

Beckford, the eccentric author of "Vathek," desired to be buried in his garden, at Lansdowne, but the idea not falling in with the religious views of his daughter, the Duchess of Hamilton, his body was placed for some time in the burial ground of the Bath Abbey, while the duchess caused his garden to be laid out as a cemetery, and there he was finally interred in a plot of unconsecrated ground, separated by a circular trench from the consecrated portion around. He lies in a massive red granite tomb, designed by himself, and the body is placed above the ground to mark his descent from the Saxon kings, who were, it is said, buried in the same fashion.—*R. Passingham, in "Notes and Queries."*

THE INDOOR GARDEN.

PLATYCERIUMS.

A VERY remarkable genus of epiphytal Ferns, differing from all other known kinds in their manner of growth and in the extraordinary configuration of their fronds. They are large stemless plants, with fronds of two sorts. Those first produced are broad, roundish, entire, and spread almost horizontally, forming a laminar rosette or shield. These fronds are sterile. As the plant advances in growth, the fertile fronds develop themselves from the centre of the shield. They are quite different in form from the sterile fronds, from which they stand out in all directions to the distance of two or three feet, presenting very much the appearance of a number of stag's antlers grouped together, with an effect as quaint and striking as can be possibly imagined. Four species are known in cultivation, viz.:—*P. grande* (East Indies and Australia), *P. alcicorne* (East Indies and Anstralia), *P. Stemmaria* (West Africa), and *P. biforme* (East Indies). They require stove heat (except *P. alcicorne*, which may be grown in a greenhouse), and are usually placed on blocks of wood, to which they adhere like the epiphyte Orchids, the base of the shield



Platycerium grande.

being surrounded with sphagnum. They may, however, also be grown in baskets, in a mixture of sphagnum and peat, with a few pieces of crushed charcoal. As a basket plant, *P. alcicorne* is very effective. *P. biforme*, the last which has been introduced, is as yet rare in cultivation. In a young state it somewhat resembles *P. Stemmaria*, and promises to be one of the finest of the genus.

NEGLECTED PLANTS.

THERE are many valuable plants that might be appropriately grouped under this head. Two of these appeared at the recent exhibition of the Trowbridge Horticultural Society, and deserve to be rescued from the comparative oblivion in which they are hid. One of these, *Rogeria gratissima*, a beautiful decorative plant, something like a *Laurestinus* in appearance, and like the *Ixora* it produces its flowers in large terminal heads or trusses. According to Mr. B. S. Williams, it is a native of Las Chiapas, having there been found at an elevation of 7,500 feet. Now here is a plant whose delicate beauty and freedom of bloom singles it out as peculiarly well adapted for greenhouse and conservatory decoration, and yet, how seldom is it met with. The example seen at Trowbridge was of large size, and literally covered with flowers. It is a plant that comes into bloom shortly after the growths are completed. The flowers are deliciously fragrant, and, with a little care, it can be had in bloom both summer and winter. The plant in question appeared

to have had just the ordinary treatment bestowed on stove and greenhouse plants; it is invariably classed with stove plants. Mr. Williams says it should be grown in a compost of rough fibrous peat, leaf-mould, and a little loam, with some silver sand added. It may be that the mention of the plant will call attention to its merits, and some one who cultivates it will be induced to give some account of it, and describe its treatment more in detail than Mr. Williams does.

Even more strikingly beautiful, and possessing a higher order of effectiveness as an exhibition and decorative plant, was *Chironia ixifera*, belonging to a genus of beautiful plants. When well grown and flowered, it has a rich yet soft beauty that has a kind of fascination about it, being radiant with beautiful pink flowers not unlike those of a *Linum* in appearance; indeed, I know of no plant it could be more appropriately likened to. It is commonly treated as a cool greenhouse plant, being cut back hard about the beginning of October, and repotted early in the spring, using a compost of good, fibry peat, with which is mixed plenty of sand, using well-drained pots. The plants should be placed in a cool and airy spot in the greenhouse. It is a plant that does not like to be overpotted.

Other much neglected *Chironias* are *C. grandiflora*, *glutinosa*, and *decussata*, all of which form excellent subjects for the decoration of the greenhouse during the summer and autumn months, when the greater number of such structures are not over-filled with handsome plants. All the sorts are easily induced to form compact, large-sized specimens; and when well managed, they become literally covered with bright-coloured flowers, which keep gay for months together. Young plants will be found to form the finest specimens, and therefore a good stock of them should be kept up by annual propagation. For cutting, select strong, short-jointed, rather firm bits of young wood, as early in the season as they can be obtained. Plant in light, sandy soil, under the protection of a bell-glass, and plunge the pot in a mild bottom heat. As soon as the cuttings make a little growth, they will be sufficiently rooted to bear potting singly in 4-inch pots. After potting, place them in a rather warm, moist situation, till they have become established in their pots. After this, the best situation during the remainder of the growing season will be a pit which can be kept sufficiently close and moist to promote rapid growth, and where light and air can be afforded to prevent the production of weakly shoots. Shift into larger pots as may be necessary, and keep the plants regularly pinched back, and pegged down or tied out, so as to secure a compact bushy habit; and maintain a moist atmosphere till about the middle of this month, when they should be prepared for winter by full exposure to sunshine, and a free circulation of air on every favourable occasion.

When the weather becomes cold and damp remove the young specimens to an airy situation near the glass in the greenhouse. Give no more water to the soil during winter than may be required to maintain it in a healthy condition, and admit air freely during mild days, but avoid cold drying currents. By propagating early, keeping the plants growing as rapidly as possible till late in autumn, and starting them into growth early the following spring, they will form nice moderate-sized specimens for flowering late in summer and autumn; but if very large examples are wanted, it will be expedient to grow plants a second season before allowing them to flower, and in this case it will not be necessary to start them into growth so early in spring as when they are intended to form flowering specimens the same season. With good management from the first, and an early start, nice plants in 10-inch pots may be obtained in time for flowering the second season. To effect this, place them in a light airy situation, close to the glass, early in February, or as soon after as circumstances will admit of a moist temperature of about 50° or 55° being maintained. When growth commences give a liberal shift, and, as I have already stated, attend to the formation of well-shaped specimens by stopping and training the shoots, as may be required. Water must be carefully administered for some time after potting, but when the roots strike into the fresh soil, and the plants commence to push vigorously, a liberal supply will be necessary, and clear manure water from the stable or farm-yard tank, diluted with an equal quantity of clean water, may be given frequently. Stopping should not be practised after the middle of May, or the plants will be late in flowering, as blossoms are not freely produced till the wood becomes rather firm. And when the shoots produced, after the final stopping, are from 4 to 6 inches long, the plants should be removed to the warm end of the greenhouse, or to a cold frame, and gradually accustomed to a free circulation of air, full exposure to sunshine, and a rather dry atmosphere, which will check growth and hasten the production of flowers. While in blossom give a liberal supply of water to the soil, and avoid exposing the plants to cold drying currents of air.

When the beauty of the specimens is over for the season, they may be rather closely pruned and removed to a light airy part of the

greenhouse for the winter; and if repotted in the spring, and treated the following season as just directed for last, they will form very large specimens, and this in time to be in full beauty in June or early in July. But after flowering this time it is hardly advisable to retain the plants in hope of their being further useful, for they seldom prove of much further value, and unless watered with great care during the autumn and winter they become a certain source of disappointment. This however, need be the cause of no regret, inasmuch as young plants are easily propagated, requiring but little care; and as these form nice useful sized specimens, the plants that have flowered in large pots may be thrown to the rubbish heap as soon as their beauty is over. A rich light porous soil is essential for the successful culture of the Chironias. I use rich turfy peat and turfy sandy loam in about equal proportions, with a liberal mixture of silver sand; and for plants to be thrown away after flowering, I add a sprinkling of thoroughly decomposed cow-dung. For young plants a quantity of broken potsherds, broken bones, or charcoal, is useful in securing perfect drainage. Let the different kinds of soil be well broken up and intimately mixed before use, and see that they are in a proper state as regards moisture.

R. D.

A FOSSIL PALM TREE IN COLORADO.

TWENTY-ONE miles south of Denver lie the remains of a Palm tree preserved in stone. It is on the hillside looking down upon Cherry Creek, and 100 feet or more above the level of the valley of that stream. The soil is similar to that of most of the upland plain in Colorado, and covered at present with a thick crop of grass and weeds. Bunches of Currant bushes laden with fruit cluster about the wooded rocks, and above to the top of the ridge and along its crest are scrubby young Pines and a few large trees. At the foot of the hill, 300 yards to the westward, passes the old stage road from Denver to Santa Fé. The traveller looking up could see a ledge or mass of rough-looking rocks, rising 10 feet or 12 feet above the surface of the ground and about 40 feet in length. Camp fires have been built against it, and campers have doubtless sought shelter from storm or sun under its projecting front, little dreaming that they reclined in the shadow of a Palm tree. The pupils of a schoolhouse near by have played about it many a day. Last winter a hunter for curious specimens stumbled upon it, and guessed its true character. Specimens were brought to Denver and pronounced by the best authorities to be petrified Palm-wood. But the mass was reported so large that the story seemed incredible. A careful examination reveals the following facts:—The monster tree evidently grew where it lies, and there has been very little change in the surface of the ground at that point since its fall. Its fall was towards the north, and across a narrow tongue or spur of the hill near the crest, on the south side of which it stood. The unevenness of the ground caused the part of the trunk now visible to break in two pieces. The first, or butt section, is 39 feet long, and it has apparently rolled about half over, down the hill. In the heart was either a hollow or a mass of decayed wood, from four to six feet in diameter. The upper side of the log has been broken up by the action of the elements and frost, destroying between one-third and one-half its circumference, and the fragments lie scattered about in huge blocks. The more than half that remains intact is a huge trough; the surface of the earth is even with its brim on the up-hill side and 10 feet below it on the down-hill side. As before stated, this section is 39 feet long. As near as can be determined, without excavating the adjacent earth, the diameter of the tree at its base is 22 feet. Midway of its length, or 20 feet from its base, it is 15 feet. The second section is 21 feet long, and evidently lies where it fell. Striking square across the crest of the ridge, the immense weight almost buried it in the earth. Its outlines are hard to determine without digging, but at mid-length, or 50 feet from the stump, it is certainly nine feet in diameter. The two sections, as described, measure just 60 feet in length. Above that point the body of the tree fell into a gulch, which has been since nearly filled up by the wash from the hills above. Digging would doubtless reveal much more of the trunk. And all this immense mass of wood has turned to stone, hard and flinty as porphyry. Some of it looks like agate, finely veined and delicately tinted, other with opaline lustre; some as white as the driven snow, or with the polished surface of chalcedony. Portions of the trunk must have been rotten, for its stony remains are honey-combed, and the cavities filled with delicate crystals, that sparkle in the sunlight like real diamonds. Breaking into the knots with heavy blows of the sledge hammer reveals miniature caves and grottoes glittering with stalactites and stalagmites of real crystal. Specimens of the bark can be chipped off, looking as natural, doubtless, as when its own green leaves waved in the breeze, and Darwin's inchoate man gambolled among their giant stems. It is useless to speculate upon the time that giant of the forest flourished;

of the hundreds of thousands of years during which a torrid sun daily shone upon its shining leaves; of its fall and immersion in the silicious bath that changed its every fibre to flint. It is history in stone, telling of changes in the condition and climate in this part of the world that may well make one shiver if he expects to stop here fifty or a hundred thousand years longer.—*Denver Times.*

Protecting Orchid roots.—I shall be glad if you or any of your readers will kindly tell me how to save the tender young points of the roots of my Orchids. They are eaten off by woodlice, cockroaches, or some night-roaming pest which evidently loves them with the passion of an epicure.—H. W. BOWDEN. [Wrap little bits of cotton wadding round the roots, beginning a little way up the hard old portion, and finishing an inch or so below the tender green point. This plan is followed in Mr. Williams's collection at Holloway with the best results. The enemy does not pass the cotton wadding.]

Lilium auratum var. Purity.—This is one of the best of the many varieties that exist of this fine Lily. I saw it a few days ago, at Mr. B. S. Williams's Nursery, Holloway. The plant had only one stalk, but on that there were six well developed blooms. Each of these was quite as large as any that I had formerly seen on the other varieties, yet quite distinct from every other form of that Lily. The sepals and petals, instead of being somewhat cup-shaped, as is generally the case, present a broad flat surface, about seven inches in diameter, the ends being slightly reflexed. The sepals and petals are broad, and of a pure white colour, nicely marked with dark brown spots, the yellow tinge of the common form being entirely absent; even the conspicuous golden stripe so prominent in the original species is almost gone in this variety, only at the base of the petals is there the faintest trace of the "golden ray."—G. F.

TOOLS, IMPLEMENTS, &c.

THE BELLOWS-SPRINKLER.

ONE of the most ingenious contrivances for distributing fluid insecticides that has come under our notice is the Soufflet-injecteur, or bellows-sprinkler recently patented in Paris by M. Pillon. It consists of a small bellows, about the size of a library bellows, with a brass pipe or nozzle some 4 inches long.

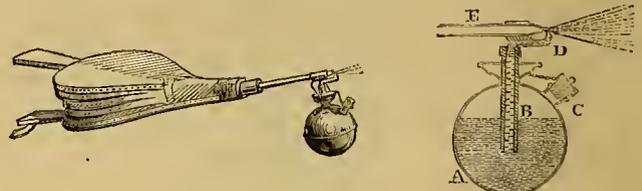


Fig. 1.

Fig. 2.

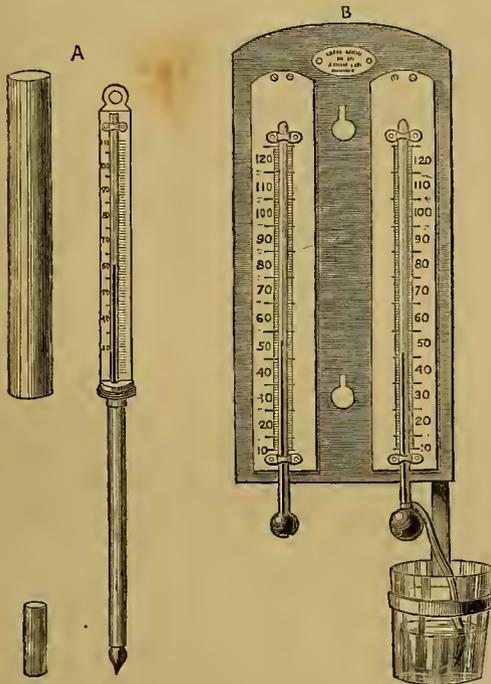
Near the end of the nozzle is suspended a hollow brass ball capable of containing nearly a pint of liquid. This ball is attached to the nozzle by a universal joint, so that it may preserve a vertical position no matter in what direction the nozzle may be pointed. The arrangement and general appearance of the apparatus are shown in Fig. 1. In the section shown by Fig. 2, A, the opening, represents the brass ball, B a vulcanised India-rubber tube, C the opening through which the liquid is poured into the ball closed by a cork, D a bent brass tube attached to the top of the India-rubber tube and opening into it, E the nozzle of the bellows. The aperture of the tube D is on a level with the centre of the aperture of the nozzle of the bellows, and the rationale of the working of the apparatus is this:—Two or three blasts from the bellows exhaust the air in the tube D and its continuation the India-rubber tube B. The liquid in the ball A immediately rushes up through the vacuum to the aperture in D, and the next blast from the bellows drives it forward in a very fine spray. The insecticide is thus distributed evenly, effectually, and without waste. The principle of this is not new. It is the same as that of the "rafraichisseur" employed by medical men on the Continent for cooling the heated brows of their patients with a refreshing spray. But the tubes of the "rafraichisseur" are of glass and the liquid is distributed from it by breath from the mouth. M. Pillon's improvement consists in the addition of the bellows, which enables the operator to reach distant parts of a plant or tree, and at the same time allows him to spare his breath. It is evident that the bellows-sprinkler can also be employed for sprinkling with a fine spray plants grown in rooms more conveniently than the "rafraichisseur." To those who may wish to examine the implement we shall have much pleasure in showing one sent to our office for inspection by Messrs. Dick Radclyffe & Co., of Holborn.

ON A THERMOMETER FOR TAKING TEMPERATURE AT THE ROOTS OF PLANTS.

READ BY MR. GLAISHER, AT THE BIRMINGHAM CONGRESS.

CONSIDERING that the ascertainment of the temperature to which roots are subjected, in connection with their more or less luxuriance of foliage, of fruits or of flowers, opens up an unexplored field of information, I have for some time considered how best this information could be obtained, and have designed a thermometer with a tolerably sensitive bulb, which may be placed either at one inch, two inches, or three inches below the surface of the soil—a depth known definitely by a circular plate fixed upon the stem of the thermometer by bayonet joints, resting on the surface of the soil at one inch, two inches, or three inches from the centre of the bulb of the thermometer. I have considered it desirable that the whole instrument should be encased, both for its safety in carriage from place to place, and when in use.

One of these thermometers is exhibited (fig. A.), prepared for observation at these depths. The price of this instrument is 12s. 6d., to be furnished by Mr. Ackland, of Horne & Thornewaite's, 123, Newgate Street, under the condition that it has been previously examined and certified by myself as to its accuracy, and that no error, so much as three-tenths of a degree, shall be present at any part of the scale. An instrument of this form for a depth of six inches would be 17s. 6d., under the same conditions of my examination before sale. As most roots are within six



Ground Thermometer.

Wet and Dry Bulb Thermometer.

inches of the surface, these instruments would suffice for such observations, but other instruments for greater depths, on the same principle, could be made as required, under the same conditions of examination.

It is exceedingly desirable to be able to ascertain the degree of temperature surrounding roots nourished with different manures, particularly those which readily accept nourishment, and to ascertain whether the same manures in the same proportions yield the same temperatures with different species, or whether the temperature, however derived, which is best to bring one species of plant to perfection is the best for other varieties of that species.

An exact knowledge of the state of the humidity of the air is as important as that of its temperature, in all closed buildings used for horticultural purposes. When plants are imported from other climates, their more or less capability of acquiring maturity is much dependent on the more or less approximation of the climate from which they came, both in its degree of humidity as well as its temperature. By the use of the dry and wet-bulb thermometer, both these elements are known, and the one now exhibited (fig. B.) is fixed on a metal frame, so that it cannot be injured by water in the greenhouse. I consider that instruments of this class, for this purpose, should be good and inexpensive. The pair of thermometers, as shown, are very nearly without errors at every part of their scales, and could be used for outdoor determinations of temperature and humidity of the air if necessary. Mr. Ackland has offered to furnish these instruments thus mounted at 15s. the pair, upon the agreement that he will send them to me for examination before mounting, and sell those only to horticulturists which are furnished with my certificate of their accuracy, and that I am permitted to reject all instruments which may have an error as large as three-tenths of a degree at any part of their scales. These instruments have also been approved by the Royal Horticultural Society.

A HOLIDAY IN SWITZERLAND AND NORTH ITALY.

THE following interesting note is from a gardening friend of ours, now enjoying his first trip into Switzerland and North Italy—lands so densely studded with "nature's gardens," that we wish everybody interested in horticulture could see them.

"MILAN, AUGUST 28, 1872.

"Since writing to you from Lucerne, we have been so constantly moving about, that there has been no opportunity of writing to you again until now. We went from Lucerne, taking many interesting places in our way, to Interlaken, where I was much pleased with the magnificent avenues of glorious old Walnuts, said to be the largest number of big Walnuts altogether which can be found in Europe. Many of the oldest trees have scarcely a nut upon them, but the younger trees are heavily cropped; taking the average, there is about half a crop on the whole. From Interlaken to Laterbrunnen, saw the Stawback falls, and went up the Murren, and got a glorious view of the Bernese oberland snow mountains. The flora everywhere is most interesting, so is the geology. I much long to traverse the country in the company of some good botanist and geologist. From Laterbrunnen to Grindlewall, where there are two glaciers within a couple of miles of each other, and then on the outskirts of the forest, I saw a very handsome specimen of *Pinus Cembra*, perfect in shape, and from 30 to 40 feet high. From Grindlewall, over the great Schideck to Rosenlani, where I saw hundreds of miniature Alpine gardens, little natural mounds in the mountain, covered with most lovely Alpine flowers, and arranged in such wise as defies art to imitate them; here also for the first time I met with the *Rhododendron ferrugineum*, covering hundreds of acres. No forest trees here, only the Spruce; we had long lost the Silver Fir, it does not seem to thrive in the high altitudes. From Rosenlani to Meyringen, thence through the Grimsell Pass, to the Glacier du Rhone, the glacier which forms the source of that noble river, thence through the valley of the Rhone, to Brig, posted from there through the glorious Simplon to Arona, where we took rail to Milan. Every step we have taken has been full of interest, but to give it all in detail would fill a volume.

"At the highest point of the Simplon Pass, we got beyond the line where trees grow and plants flower; about the last shrubby plant which I observed at that point was a creeping *Rhododendron* in large patches, growing over the face of the rocks. Near the *Iles des Borromeo*, on Lake Maggiore, we made a halt, which gave me the opportunity of visiting the palace and gardens of Count Borromeo. The terraced gardens are curious, and the grounds, although very limited (the whole island cannot be more than 2 acres; and in addition to the Count's palace and gardens, there are several hotels and private dwellings), contain many fine specimens of New Holland and other trees and shrubs, which we can only grow indoors in England; *Eucalyptus*, very fine; *Camphor tree*; *Camellias*, double white and single red, 12 to 14 feet high, and as many through; *Oleanders*, magnificent, red and white; a very fine *Salisburia adiantifolia*; a grove of *Magnolia grandiflora*, each tree from 25 to 30 feet high; a very fine *Deodar*, and many other rare plants which I had no time to note, as I had only a few minutes to run over the place. *Shaddocks*, *Citrons*, *Oranges*, and *Lemons* in profusion, grow on the terrace walls, with *Bignonia grandiflora* and *radicans* rambling about and flowering abundantly, in the most graceful disorder. *Plumbago capensis*, almost discarded from many gardens, grows most luxuriantly, and forms one of the most charming floral features in the place. It must be seen to be appreciated and realised; it is so entirely different from what it grows in England. Last, but not least, is a plant new to me, but the gorgeous effect which it produces will never be effaced from my recollection—*Lagerstroemia indica rosea*—a native of Japan and China. I hope you know it, and I shall be glad to know if plants of it can be obtained in England, and whether it will stand out of doors during winter; the foliage is a dark green, and the leaf is thick and fleshy, not unlike the foliage of a *Ligustrum* which was introduced into England from Japan by Messrs. Fortune and Veitch; the flowers form a raceme, rose coloured, and terminal; some plants which I saw were 8 or 10 feet through, and as many high. Every shoot bore a spike of flowers, and the effect was grand in the extreme. The small Mosaic garden, or as such gardens are termed in England, "embroidery," is very effective, and in character with its surroundings, as looked at from the stone plateau which forms the apex of the ten terraces. *Hibiscuses* of all kinds grow and flower abundantly in this locality (along Lake Maggiore), also the *Rose Acacia*, and *Magnolia grandiflora* is as common as is the *Laurel* with us. I did not observe the *Portugal Laurel*, only the variety of it introduced by Osborn & Sons, *balearica* or *taurica*, I think they called it. A species of *Gleditschia*, a more slender kind than *horrida*, is much used for hedges, and a most excellent fence it makes. I also saw the Chinese *Privet* used for a garden hedge on the top of a sunk fence. I likewise observed fine specimens of it (*Chinese Privet*) as standards; stems 3 to 4 feet high

and good round heads, looked less stiff and formal than Oranges or Bays. *Paulownia imperialis* very fine, particularly so when covered with fruit. The *Ailantus* in flower had a very fine effect, and of it I observed several varieties. I would strongly recommend the red-berried Elder to be planted in our shrubberies in shady and rocky corners; it grows profusely in Switzerland on the mountains, and at this season of the year the effect produced by the red berries is very striking.

"I shall henceforth be able much better to appreciate your Alpine book after having seen the beautiful examples of natural Alpine knolls referred to. I was charmed beyond description with them, and much wished you were with me to enjoy the scene, and, if possible, to have sketched them for the benefit of your readers who could not see them *au naturel*.

"In many of the cottage gardens in Switzerland I observed single plants of hemp grown 8 to 9 feet high, and branched out like pyramidal Pears; they had doubtless received special care, and formed very interesting plants; they would look well in peculiar situations in our gardens, or might form a centre for gayer plants. The Berberry is very abundant in Switzerland all amongst the mountains and valleys; plants of it 3 to 4 feet high and covered with scarlet berries are very effective."

HOUSEMAID GARDENING.

THE progress of improvement in our gardens is much retarded by the habit of looking at any suggested improvement from the housemaid's point of view. Very often the question is not, "Is the improvement a desirable one?" but "How will it interfere with the progress of our garden dusters?" Lately I suggested the very obvious improvement that might be wrought by breaking up and arranging in a perfectly easy, varied, and unbroken manner the margin of a mass of choice shrubs—formal even to ugliness. The reply was, "How could we get the mowing machine to work at it?" Many instances could be given of a like way of looking at the garden. Need it be said that gardens are not made for the mowing machine, the broom, or the edging iron, but for the highest expression of the beauty of the vegetable kingdom, and for the enjoyment and instruction of men and women? Nobody is more anxious than I am that the gardener should be relieved of much of the needless fruitless drudgery that he now has to endure. The whole course of his existence at present is a weary repetition of the same endless labours. Not in one place out of twenty are the gardener's labours devoted to the formation of features which take care of themselves after planting, and improve year by year. But to be told in an age when people go to the trouble and great expense of scratching over and replanting the same flower gardens year after year, that any attempt at a purer system of gardening is likely to interfere with the comfort of the mower or the convenience of the edging-iron is really too much. Certainly it is a little easier to mow and rake, if raking be permitted, a long straight, and it may probably be, bare margin, to a belt of plantation or mass of choice shrubs, than it is to give the necessary attention to a border fringed as some of the shrub borders in Battersea Park are beginning to be fringed. But the difference in aspect is so great that the small additional care required in mowing, &c., should never be named against it, especially at a time when the whole of the resources of most gardens go to produce costly features, which endure a few months, leaving the ground ready for fresh labours.

W. R.

THE TRIUMPH OF VEGETATION.

YOUR illustration last week in reference to this subject brings to my mind Miss Martineau's graphic account of a deserted estate in the Island of Hayti, after the war of independence between the negroes and the French: "The cane-fields" (says Miss Martineau), "heretofore so trim and orderly, with the tall canes springing from the clean black soil, were now a jungle. The old plants had run up till they had leaned over with their own weight, and fallen upon one another. Their suckers had sprung up in myriads, so that the racoon which burrowed among them could scarcely make its way in and out. The grass on the enclosed lawns grew so rank that the cattle, now wild, were almost hidden as they lay down in it, and so uneven and unsightly were the patches of growth, that the blossoming shrubs with which it had been sprinkled for ornament, now looked forlorn and out of place, flowering amidst the desolation. It was no easy

matter to know how to effect an entrance to the house. Enormous gourds had spread a network over the ground like traps for the feet of trespassers. The front of the piazza was completely overgrown with the creepers which had been planted there only to cover the posts, and hang their blossoms from the eaves. They had now spread and tangled themselves till they made the house look like a thicket. In one place, however, between two of the posts, they had been torn down, and the evening wind was tossing the loose coils about." C.

Legal Tautology.—Some idea of the tautology of legal formulae may be gathered from the following specimen, wherein, if a man wishes to give another an orange, instead of saying, "I give you that orange," he must set forth his "act and head" thus:—"I give you all and singular, my estate and interest, right, title, and claim, and advantage of and in that orange, with all its rind, skin, juice, pulp, and pips, and all right and advantages therein, with full power to bite, cut, suck, or otherwise eat the same orange, or give the same away, with or without its rind, skin, juice, pulp, and pips, anything heretofore or hereinafter, or in any other deed or deeds, instrument or instruments, of what kind or nature soever to the contrary in anywise notwithstanding."

Testimonials.—It has been suggested to present the Earl of Essex with a testimonial in consideration of his kindness in allowing the people of Watford and the neighbourhood to enjoy unmolested the whole range of his beautiful park. In respect to such a proceeding his lordship writes:—"In my opinion the practice so common of late years (to the extent of becoming a positive nuisance) of getting up a testimonial to any one, simply because he has conducted himself decently (not always the case) and done his duty, is strongly to be deprecated, as leading to the inference that doing one's duty is of such rare occurrence that it requires a reward. If a man does his duty so far as he can to the public, and is kind and friendly to his neighbours, he will assuredly possess their esteem, without requiring a testimonial to prove it; and if not he has no right to it." Cassiobury Park is very much frequented by the inhabitants of the parishes surrounding it, and his lordship adds, "Long and much may they so enjoy it, if they will refrain from wilful mischief."

THE GARDENS OF ENGLAND.

CLIVEDEN.

THE horticultural pilgrim* has few more delightful memories than those of Cliveden. Stately wood and noble site and bold but sweetly grassed and planted banks, and that long reach of the Thames sweeping round the high-crested woods and cutting them off from the wide and varied landscape beyond, make Cliveden a garden independent of the gardener's art, and then in those days, when the idol "bedding-out" was rampant, and evidences of him were visible in every garden in the shape of bare beds early in the year, how delightful was one's first visit to that noble sunny garden in spring, when it was as full of flowers as—Well there is nothing to be compared with it except the plains and foothills of California after the winter rains, when the ground everywhere is a mass of glowing blossoms. Yes, the myriads of Pansies and Violets and Daisies and Silenes, and Anemones, and Primroses, and Oxlips, and Wallflowers, and Arabis, and evergreen Candytuft and Gentianella, that used to look up with one face to the sun on bright, early summer mornings in the Duchess's time, were worth a long journey to see. So were the wild wood walks with the wood Forget-me-Not nestling in tufts, and the Honesty stately on the chalk banks, and the Blue Bells, carefully plauted, as if the wild ones were not sufficiently plentiful, rivalling in numbers the blades of grass on many of the slopes. Then, when the "subtropical" movement came in, and the scarlet idol, before alluded to, began to slink behind banks of stately leaves, no place was more interesting to the visitor than Cliveden. Along its shady walks, and its more open, sunny dells, giant Solanums, tapering Cannas, and tropical-looking plants of many kinds, made some parts of the place look like glimpses of some happy spots in some tropic isle.

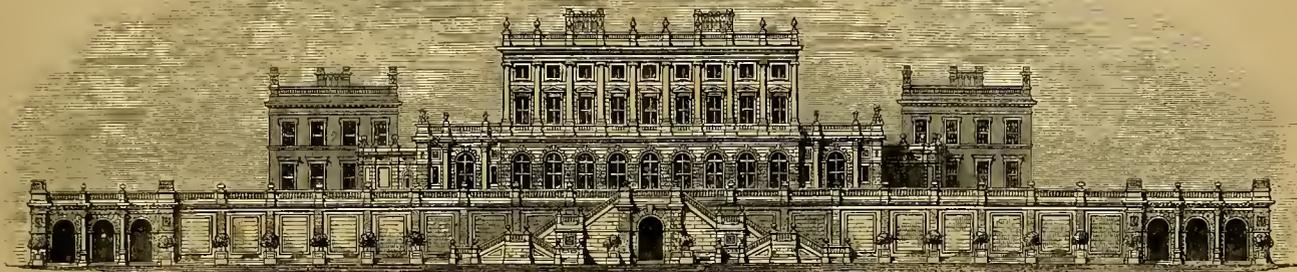
Now Cliveden has entered into another phase, and under its present proprietor, the Marquis of Westminster, is in some respects a new place. Mr. Fleming, who for so many years has managed the place so well, is still at the head of affairs,

* A wretch who goes about seeing "fine places" till he ceases to see any beauties in the modest charms of an unpretending or old-fashioned garden, and who seems to find nine out of ten of the gardens he visits as devoid of charms as Sir C. Coldstream found the crater of Vesuvius.

and has carried out all the new garden improvements, which we are glad to say are very important ones.

From a landscape gardening point of view, the most remarkable of these is the opening up of a long valley, which affords a charming prospect of the distant country, and which in the end of it near the gardens is treated in the best and truest

repulsive examples of the ultra-formal school, and thrusts itself out in a rather awkward manner into the grand landscape. To the garden terrace itself, of which, thanks to the courtesy of Mr. Murray, we give a view from "The Life and Works of Sir C. Barry," there is no objection whatever. It is one of the noblest examples of its kind. It is to the long and



Cliveden—Garden Front.

manner. A graceful sketch of it by Mr. Alfred Dawson, and engraved by his new process of "Typographic Etching," forms our principal illustration this week. As will be seen, the near portion of this valley is finely embellished with trees, and it gradually verges off into the great river woods and the distant country without showing a single objectionable feature. The

peculiar looking garden that runs forth from its base that the above remarks apply. The terrace, rightly a rather narrow one, commanding a fine view—seems, as terraces in England rarely do, a necessary appendage to the house, while its walls are draped with climbers in a beautiful way. This results from the walls being perfectly covered with suitable plants which



Valley in the Gardens at Cliveden.

flanks of this valley offer a capital position for the noblest species of gardening, the artistic grouping of hardy trees and shrubs, around the feet of which will cluster the wild and hardy flowers. This valley is undoubtedly one of the finest things that has been done in the way of landscape gardening near London for many years past. As a feature of Cliveden it is far before the great flower garden, which is one of the most

are not trained in too rigidly, but, on the contrary, are allowed to show a good deal of "free nature's grace."

Various other important improvements are being carried out at Cliveden, particularly a very complete and extensive glass garden, to which, and to various other features of interest belonging to this now more-than-ever-remarkable garden, we hope to have the pleasure of alluding at another time.

THE HOUSEHOLD.

PROFESSOR NEWMAN ON VEGETARIANISM.

FROM A LECTURE DELIVERED AT GLOUCESTER.

[At a time when, in consequence of the high price of animal food, many persons are beginning to consider whether quantities of expensive meat are really necessary to a healthy existence, it may not be amiss to direct attention to the views of Professor Newman, who, with many others, thinks that we much need a great reform in the matter of food. The many kinds of vegetable and fruit food that are now almost entirely neglected by the majority of the people, or so cooked as to be repulsive or unwholesome, are probably more evident to ourselves than to others, and we propose to discuss the subject from a horticultural point of view at an early date.]

"What shall we eat?" is really a question of first importance: but it is seldom so treated. In general, the rich eat what they like, and the poor what they can; neither the one nor the other studies what is best. Besides, there is a perverse influence at work of which few seem to be aware. Rich men are ashamed to give *cheap* food to their friends, even when the cheap is better than the dear. London sprats are, in the opinion of many, superior to Greenwich whitebait: yet those who eat sprats in private, and prefer them, dare not offer them to their friends, because they are cheap. This does but illustrate a pervading principle. It is a baneful folly to think, that what is rare, what is difficult, and what is out of season, is best. And when the richer, who can well afford it, aim at expensive food because it is expensive, the poorer, who ill afford it, imitate them, and get worse food at greater cost. I cannot treat the subject of food, unless you will, at least for a little while, consent to look at things with fresh eyes, and refuse to be blinded by fashion and routine.

I have called my lecture Vegetarianism; but, as the word does not wholly explain itself, you may justly ask me for its meaning. Many suppose it to mean a diet consisting of table vegetables. It is true, that these are an essential part of vegetarian diet, yet they are by no means the most important. Vegetarian food consists mainly of four heads—*farinacea*, pulse, fruit, and table vegetables.

1. The foremost are *farinacea*; they are the "staff of life." They are chiefly Wheat, Barley, Oats, Maize, perhaps Rye; also Potatoes, Yams, rice and sago, tapioca, and such like. Vegetarians seldom endure baker's bread; they always become fastidious about bread, as teetotallers about water; and very often prefer unleavened cakes, as Scotch scones, or biscuits not too hard; else, macaroni, also oatmeal porridge. The makers of aërated bread find that four per cent. of the material is wasted in fermentation. Besides, we have delicious Oswego or rice blancmange, or it may be hominy and frumenty. I guarantee to you all, that no one loses a taste for nice things, by vegetarian food, however cheap.

2. Under *pulse* we practically understand Peas, Beans, and Lentils. They have excellent feeding qualities, but also a particular defect, which is chiefly remedied by Onions adequately mixed.

3. The word *fruit* speaks for itself; only it may be well to add that the dearer fruits are just of the least importance for food. Apples might be much cheaper than they are; and no fruit is more universally serviceable. The cheaper Figs, French, Italian, and Spanish, are less cloying and more feeding than the luscious Smyrna Fig of the shops. Raisins and Dates are now supplied in cheerful abundance. But peculiarly, as I believe, nuts are undervalued as substantial food. We do them great injustice. We put them on the table as dessert, to be eaten when the stomach is full, and then slander them as indigestible, because the stomach groans under an excess of nutriment. We call them heavy because they are nutritious. In Syria, Walnuts and coarse dry Figs make an admirable meal. Filberts I count better than Walnuts, and Brazil nuts better still. Chestnuts have the disadvantage of needing to be cooked, and being hard to cook uniformly well; but when rightly dressed, perhaps of all nuts accessible in England they are the most valuable. Cocoa-nuts, when we are wiser, will be better applied than to tempt a jaded appetite to hurtful

indulgence. Almonds are too dear to be available for food; yet concerning Almonds, a physician who is no vegetarian gave me interesting information the other day. "No man," said he, "need starve on a journey, who can fill his waistcoat pocket with Almonds. If you crush Almonds thoroughly and duly mix them with water, no chemist in Europe can distinguish the substance from milk, and milk we regard as the most perfect food." This suggests, moreover, that nuts, to become wholesome, must be very thoroughly crushed and bitten.

4. A few words on table vegetables. Potatoes and pulse I have noticed, and now pass them by. Mushrooms are by far the most delicious, and abound with nitrogen—a rare advantage: but we have them too seldom in the market. On the whole I regard those vegetables to be most important which supply flavour or correct defects in other food; pre-eminently the tribe of Onions, also Celery, Parsley, Sage, Savory, Mint, with the foreign articles ginger and pepper. Onions and Celery we do not cook half enough; indeed Cabbage and Cauliflower are eaten half raw by the English; on which account we do not know their value. Much the same may be said of what the farmer calls roots, *i.e.*, Turnips, Carrots, Parsnips, Beet. Do not think that I despise any of these, when I insist that this class of food stands only fourth. One who confines himself to these four heads of diet is indisputably a vegetarian.

In our own island, as we well know, agriculture has existed before Saxon times; but at the Norman conquest, and long after, the land devoted to cattle or left in a state of nature vastly predominated. In those days the poorest ate much more flesh meat than now. There has been a continual diminution of flesh meat, and far larger supplies of vegetarian food. This is neither from unjust institutions nor from unfair taxation; but it is a normal result of increased population. It is inevitable on an island, sensibly limited in size; for to produce as much human food as one acre of cultivated land will yield, three or even four acres of grazing land are needed. That era had its own disadvantages. The cattle had then little winter food; they were killed and salted down in the close of the autumn. Much salt meat and salt fish was eaten, and fresh vegetables were few in species and scarce. Parsnips are said to have been long the only root, before there were Turnips or Carrots: Potatoes, we know, came in from America. Native fruit was very limited, and our climate was thought hardly capable of bearing more sorts; foreign fruit was not in the market. Now, what I want to point out, is this: that the diet of flesh meat belongs to the time of barbarism—the time of low cultivation and thin population; and that it naturally, normally, decreases with higher cultivation. We see the same thing in ancient civilisation and modern. The Brahmins in India, who stood at the head in intellect and in beauty, were wholly or prevalently vegetarians. I believe much the same was true of ancient Egypt. Men of lower caste ate flesh, and the lowest most; and among these principally foul diseases of the skin prevailed; no doubt, because, where population is dense, the poor classes, if they eat flesh meat at all, are sure to get a sensible portion of their supply diseased and unwholesome. With the progress of population vegetarianism naturally increases. I do not say which is cause and which is effect: they react on one another. When more food is wanted, and the price of corn rises, there is a motive to break up new land. Pasture is diminished. Perhaps by artificial grasses and by cultivation of roots the quantity of cattle is nevertheless sustained; yet if this process goes on, as in China (for an extreme case), the larger cattle will not at all increase in proportion to the population. Nor indeed among ourselves has it increased proportionally. The English roast beef that foreigners talk of is rarely indeed the diet of our villagers. Thirty years ago even our town artisans ate little flesh meat. Bacon, principally fat, was nearly the sole animal food consumed by our peasants, whose state has but little altered. They may almost be called vegetarians; for fat, like oil, supplies only animal heat, not the substance of muscle. Nevertheless, it is now taught, that on animal heat vital force depends, which muscle will not give.

(To be continued.)

THE ARBORETUM.

HARDY TREES AND SHRUBS.

BY GEORGE GORDON, A.L.S.

THE ACERS, OR MAPLES.

THESE are all highly ornamental trees, with opposite leaves, monœcious flowers, and two-winged keys; they are natives either of Europe, North America, or the temperate parts of Asia, including China and Japan, and with the exception of a Pinetum, nothing could be more interesting than an Aceretum, for among broad-leaved trees, few families display greater variety or grow more rapidly under ordinary treatment than the Maples. Some of them, such as *Acer macrophyllum*, *eriocarpum*, *neapolitanum*, and the common Sycamore, form rapidly growing, large, and lofty trees, while others, such as *A. monspessulanum*, *opulifolium*, and *Opulus*, are only round-headed low trees. The beautiful *Acer Lobelii* assumes a pyramidal form, somewhat resembling that of the Lombardy Poplar, while *Acer creticum* and *heterophyllum* are nearly evergreen or quite so in mild seasons; again, others have fine variegated foliage, or leaves of as deep a hue as that of the purple Beech, or so dissected as to resemble some of the smaller ferns. The leaves of many of them, too, just before they fall in the autumn, either change to a bright crimson, golden yellow, or chestnut brown, clothing the trees in brilliant colours, which only the American Oaks can rival.

THE COLUMBIA, OR LARGE-LEAVED MAPLE (*ACER MACROPHYLLUM*).

THIS forms a large, rapidly-growing tree, from sixty to ninety feet high, with ample head, and somewhat rounded outline. The stem



Columbia Maple Leaf. Size, ten inches broad, thirteen inches long, including the footstalk, which is frequently five or six inches long.

measures from ten to fifteen feet in circumference, and, when the tree stands alone, and is furnished with its long drooping racemes of yellow flowers, or when clothed with its large glossy leaves in summer, it presents an appearance which few other trees can equal. It, however, is only suited for planting in parks, or very extensive pleasure grounds, on account of its great size. It is a native of the north-west coast of North America, where it is found principally in woody mountainous regions along the sea coast, and on the alluvial banks of the Columbia river; it was first introduced into this country in 1826. It is perfectly hardy under all circumstances, and

grows best in a free loamy soil, but thrives well in any kind of ground that is not sterile or swampy. The Columbia Maple has the largest leaves of all the Acers, and if we except *Paulownia imperialis* and *Magnolia macrophylla* and *tripetala*, the largest leaves of all the broad-leaved trees we possess. The leaves, however, vary very much in size, according to the vigour and age of the tree, and the part of the tree upon which they grow. They are somewhat digitately five-lobed, with open, round, deep recesses, and several large



"Keys" of Columbia Maple.

acute serratures and pointed lateral lobelets; and when fully grown are of a deep, glossy green above, and more or less pubescent on both surfaces. In the autumn the decaying foliage turns yellowish-brown. The flowers are of a greenish-yellow, sweet-scented, and are produced in long, dense, drooping, catkin-like racemes in the end of April or beginning of May, just as the young leaves are beginning to unfold. The keys are large, and mostly with two long, widely extended winged carpels, but sometimes three are produced on the same pedicel; when ripe in September they are of a brown colour, and are covered at the base with stiff stinging hairs, which, if incautiously handled, enter the skin, and cause considerable irritation.

CONIFERS AT DROPMORE.

IN little more than a month Mr. Frost will have completed his fiftieth year as gardener at Dropmore, and as the magnificent Conifers there have all been brought up under his care, it may be interesting to know what can be done with such trees in the course of half a century.

Early in January, 1828, Mr. Frost received from the late Lord Granville a packet of seed of *Abies Douglasii*, then called *Pinus taxifolia*, which his lordship had obtained from the Royal Horticultural Society. Of these seeds only three vegetated; the produce of two of them may now be seen at Dropmore; the third, having been planted too near a fine *Araucaria*, had to be cut down. Of these Douglas Firs the largest is now a magnificent tree measuring upwards of 100 feet in height, and is as perfect a specimen of that tree as can be grown. To admire such a tree it is not necessary to be an enthusiast, for its gigantic proportions strike everyone with wonder. Its lowermost branches lie flat on the turf, occupying a space 66 feet in diameter, and from that point they taper regularly to the top, which leans obliquely to the north. The trunk 3 feet up is 9 feet 7 inches in girth. I should doubt if there is a finer or more perfect Douglas Fir in Britain than this is; but it must be remembered that it has had its raiser and trainer to keep its leaders single, and to give it additional food in the shape of surface dressings.

A Pinus insignis, a plant raised from a cutting brought at Messrs. Lee's Nursery, at Hammersmith, in 1839, is now a fine tree 68 feet in height, with a trunk 8 feet 7 inches in circumference, the diameter of the branches being 48 feet. A *Deodar* planted in 1824 has now attained a height of 52 feet, the trunk being 9 feet in girth, and the diameter of the branches 47 feet.

Pinus Benthamiana planted in 1843 is now 30 feet in height, girth of trunk 3 feet 4 inches, diameter of branches 30 feet. *Picea amabilis*, a plant raised from a cutting, is 42 feet 8 inches in height, girth 3 feet 9 inches, diameter of branches 21 feet; this was planted in 1847. *Pinus monticola*, planted in 1835,

has now attained a height of 58 feet 6 inches, the diameter of the branches being 33 feet, girth of trunk 5 feet 6 inches. *Pinus Lambertiana*, planted in 1841, is now 40 feet in height. The great *Arancaria* is 51 feet in height, with a girth of trunk at 3 feet from the ground of 6 feet 4 inches; diameter of branches 28 feet; this was planted in 1830. Female plants of this at Dropmore, 80 feet from any male tree, have ripened seeds there. Than the large tree of this I have seen none so perfect or high either in Great Britain or Ireland. Much of the success attending the growth of these trees is doubtless due to the care taken in preparing stations for them before planting, and also to the surface dressings which they afterwards received, for Mr. Frost surface dresses as many as he can every autumn, and they seem to root right up into these dressings, however thickly put on.

Before closing these remarks I may mention that it is proposed by some friends of Mr. Frost's to present him with some sort of testimonial on his completing his fiftieth year of servitude at Dropmore, which will be in November next.

Cliveden, Maidenhead.

J. FLEMING.

A Purple-leaved Birch.—At the Horticultural Exhibition held at Orleans, on the 5th of last June, the attention of the judges was accidentally directed to a number of shrub-like plants of the same kind, which were almost hidden from view in an obscure corner. On examination, they proved to be forty two-years' grafted plants of a very handsome variety of the common Birch, with leaves of as dark a purple as those of the purple-leaved Beech. To mark their appreciation of the importance of this new acquisition, the judges unanimously awarded the exhibitor a gold medal. The following is the history of this novelty:—Some time since, an old gardener in the employment of M.M. Transon Brothers, Orleans, happened to notice among some seedlings of the common Birch one plant with leaves of an unusually dark colour. He took it up, transplanted it, and afterwards multiplied it by grafting on young plants of the ordinary Birch in pots. He has now a stock of upwards of sixty one-year and two-years grafted plants. They are all grafted near the root of the stock, and those exhibited last June varied from 2 feet to 5 feet in height. It is hardly possible to over-rate the value of this addition to our list of ornamental trees. Differing from the purple-leaved Beech so widely in its airy graceful habit, the purple-leaved Birch will prove an admirable companion and contrast to it in our parks and pleasure grounds. Our purple-leaved trees are, unfortunately, rare, and we have good reason to felicitate ourselves on the acquisition of one so handsome, so hardy, so easily propagated, and so capable of adapting itself to the poorest soil. M. André has given it the name of *Betula vulgaris purpurea*.

NOTES AND QUESTIONS ON TREES AND SHRUBS.

Magnolia macrophylla.—In Texas it is stated that the leaves of this *Magnolia* often measure upwards of 3 feet in length, and some 16 inches in breadth; the flowers are said to be quite a foot in diameter, and very fragrant.

Rapid growth in Bamboos.—M. Dilschwalder, head gardener to His Highness the Khedive of Egypt, states that in the neighbourhood of Cairo, during the great heats of summer *Bambusa indica* grows at the rate of ten inches in a night, and that it ultimately attains a height of about 65 feet.

The Golden-veined Japanese Honeysuckle.—This variegated plant is only seen to full perfection when allowed to grow freely among medium-sized hardy climbers, rambling over stumps, banks, or the like. Among green plants at this season, its effect is quite unique. Its bright golden hue is conspicuous at a considerable distance. We observe that it is becoming a favourite in little villa gardens near London.

Wood v. Iron.—The *Chicago Post* condemns the substitution of iron pipes for the wooden pipes formerly in use. This is owing, it says, to a fallacy of mankind that iron, though more costly, is cheaper in the end—*i.e.*, more enduring; and this fallacy arises from the fact that because wood, when exposed to the open weather, decays rapidly, it is supposed it will do the same when buried in the earth. Experience teaches, on the contrary, not only that wood will not decay when covered up in the ground, but that it has a tendency to harden and petrify; also that iron will corrode whether in the ground or out of it. The piles used in building the bridge over the Danube river are instances of the great enduring power of wood. Over a thousand years afterwards, on examination, they were found perfectly sound, parts of them beginning to petrify. Old London Bridge, built of wood also, lasted for centuries; and water pipes made of bored yellow pine logs, laid in Philadelphia between fifty and sixty years ago, are still in use. According to the *Detroit Post*, wooden water pipes were recently taken out on Woodward-ave, Detroit, laid forty-three years ago. The wood is apparently sound as ever, showing no signs of decay, even retaining the bark, and on cutting through it into the wood the timber was found bright and in a perfect state of preservation. The pipes were made of tamaric logs about 16 feet in length and 8 inches or 10 inches in diameter.

THE KITCHEN GARDEN.

THE POTATO DISEASE.

BY JAMES BARNES.

Of this malady I was the first discoverer, and wrote the first letter about it when it made its appearance more than a quarter of a century ago; and ever since the middle of May this season, I could see, and did state, that its ill effects would be very seriously felt this year. Its appearance was quite visible to the naked eye in May and early in June throughout eleven counties which I visited. Every one, however, persisted in saying that their Potato crops were in the most luxuriant and healthy condition and entirely free from disease, and I was universally charged as an alarmist. This they also freely did on my first discovery of the disease in 1844. The fact is, the cause of the disease is always discoverable on the seed Potato itself before planting, and is visible with the aid of a good glass and a good light about the eyes of the Potatoes; and immediately the tubers commence to push it is clearly observable on the young shoots—a fact that I have closely noticed every year since I first discovered the disease, and which has been related by me many times since then. The extent of its effects depend very much on atmospheric influence. After the Potatoes have commenced their growth, wet, heavy, and ill-drained land, and close-shaded, rich, and moist garden spots invariably show the disease first, and in the most destructive form, and which has long been known to all true observers; damp, changeable weather and foggy nights also very much hasten its development. Although we have received the advice of many great men from every quarter on the subject, it is little to be depended on, and as regards extirpating or entirely eradicating this destructive pest, no advancement has been made beyond what I discovered during the first and second season of its appearance in this country. This discovery was as follows:—Plant early and deeply in the autumn, using good early and second early varieties only. Select as seed moderate or middling sized tubers at taking up time and place them on open dry floors or shelves to dry and harden. Previous to planting, dip them into a tub of brine, *i.e.*, salt and water, about the strength and consistency of that used for pickling wheat. Take them out immediately, turn them over and dust with fresh air-slaked lime while moist, and run them through a coarse sieve, to rid them of the loose superfluous lime. Always plant them whole and early, and, if convenient, in the autumn. I never advocated the planting of late kinds since the first appearance of the disease. People may say what they please, but I have always seen the late kinds suffer more than the early ones. By this means, the Potato may always be maintained in the most cleanly and vigorous health, and entirely free from disease, or vermin. Store Potatoes—as long ago advised—should always be placed in a dry, dark, and cold situation, and not so thickly together as to encourage sweating or the starting of the eyes prematurely, which deteriorates their properties.

As substitutes to fill up the great gap occasioned by the extensive destruction this season, every available vegetable will no doubt be turned to account. For this purpose, the Parsnip is no doubt one of the best, if taken fresh from the ground and used immediately; then its flavour is mild, satisfying, and substantially good; but if taken up and allowed to lie about, though only for a short time, exposed to atmospheric influence, it becomes a strong, acrid, disagreeable, unpalatable, and unwholesome vegetable, and still worse when taken up and stored in a shed or cellar, and allowed to produce the least, new roots or leaves, which is one great reason why this most valuable and nutritious vegetable is so often disliked and condemned. As to Carrots, Artichokes, Cabbage, Turnips, Broccolies, Cauliflowers, Coleworts, Borecoles, and other vegetables, everyone who has ground will have these this most favourable of all seasons in my remembrance for sowing and planting in abundance, and they will be required, too, between this and next May-day.

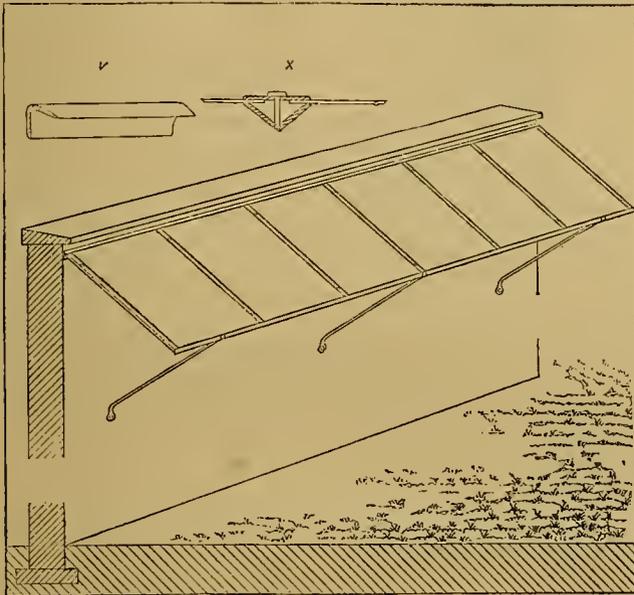
In the plan of grating down Potatoes for their starch, recommended by Dr. Hooker, there is certainly nothing new, and I fear moreover that it will be of little value to anyone. It is all very well to talk of a piece of punched tin for a rasp; indeed a good thing of the right shape would be a good sized tin tea-kettle or saucepan without the bottom, the sides being punched from the inside with a tough nail, retaining at the same time the handle to hold by. Previous to rasping the Potatoes must be peeled and washed, otherwise there would be more dirt than starch at the bottom of the tub. To rasp, wash clean, and dry the starch as recommended by Dr. Hooker, would, I know by the experience I have of the matter myself, take a strong man a whole day to prepare as much as would make a pudding for his supper. Sometimes the diseased Potatoes are so soft and offensive in point of smell that it would take many thorough washings with clean water before the starch could be obtained in a fit state, and even then the

smell would be very unpleasant, and the flavour little better. The washing and peeling is tedious work, but the rasping much worse. For this work of starch-making a good root pulper is the proper instrument, but these pulpers were not in use when Professor Henslow published his plan of rasping Potatoes, republished by Dr. Hooker. I remember well when I was a boy having to pursue the process of starch-making by rasping for laundry purposes, and a tiresome job it was, but in those days the heavy duty on the common starch necessitated economy.

GARDEN STRUCTURES.

PARHAM'S GLASS COPINGS.

THERE can be no question that the best and simplest mode of protecting our fruit walls is by a glass coping of not less breadth than two feet. Of course there are many who say the best way is to place a glass promenade against the wall, but how many are there in each county in England who can afford to do this? It seems to us like recommending a costly temple for a man who merely wants a warm coat. By all means let as many as can afford it attach a fruit house to their walls; but supposing that to be done, there would remain hundreds of miles of bare walls in England which, protected properly, would afford the finest fruit. It cannot be too clearly fixed in



Parham's Glass Coping. v. portion of sash bar used; x. mode of glazing.

the public mind that the great advantages which a tree obtains from a wall are entirely neutralized by the general absence of protection in spring. Of what use is the greater amount of heat afforded by the wall, if in consequence of our carelessness in protecting the blossoms from death-scattering frost in early spring there is no fruit for the heat to perfect? The ridiculously narrow copings which one sees everywhere throughout the length and breadth of the land are perfectly useless, inasmuch as they do not protect the tree from frost or cold frosty rains. They are far too narrow to be of any use. A temporary wooden coping of sufficient width will protect the trees thoroughly, and is used to do so with invariable success in numbers of continental gardens. But there is the objection to wide temporary wooden coping that it obscures the light from the wall more than is desirable. It may be taken off in early summer after all danger of frost is passed away, and it must be removed or the trees will not furnish the upper and darkened portion of the wall. Now as the most vigorous growth takes place in early summer, and usually before there is time in our climate to fully expose the wall, it is obvious that any opaque coping is not the best. For this and for other reasons, there is nothing then to equal the glass coping, inasmuch as it may, in addition to being used for protecting the fruit, be left

on all the summer to hasten the maturity of the fruit, if that be desired. It may then in many cases be made a fixed structure, though we think the best way is to have the glass easily removable. Then when the crop of fruit is well set and out of all danger, the glass may be removed, and the wall of trees exposed to the cleansing rains of early summer. With such perfect light, however, as is transmitted through this coping, there is no necessity for taking away the glass if the tree be kept perfectly free from red spider and other insect enemies. After desiring that some firm would introduce a cheap and withal serviceable glass coping of this kind, we were pleased to find at the Birmingham Exhibition one shown by Mr. Parham, of Bath, which we can recommend. The accompanying sketch of it was drawn on the spot by our artist at the Birmingham show. Such a coping should protect every wall on which valuable fruit trees are planted, and would well repay its cost in a few years.

THE FLOWER GARDEN.

WHITE-FLOWERED ZONAL PELARGONIUMS.

WE learn from the *Révue Horticole* that M. Sisley has succeeded in raising a seedling zonal Pelargonium with double white flowers, as well as another variety with double flowers of a chamois-colour. M. Smith, of Nancy, is also reported to have obtained a double white-flowered variety. Should they prove to be of a pure white, without anything of the rosy tinge which is usually found at the base of the petals in what are called white-flowered Pelargoniums, the acquisitions which have just been announced will be decided novelties in horticulture.

NEW DWARF ALMONDS.

IN the gardens of Paris may now be seen two very distinct and interesting varieties of the dwarf Almond tree, which have been named *Amygdalus nana microphylla* and *A. nana campanuloides*. The former grows as a branching bush, with nearly erect branches, and is distinguished by the small size of its flowers, which are of a lively rose-colour marked on the ends and outsides of the petals with a spot of deeper colour. The flowers also appear to have a tendency to become double.

A. nana campanuloides bears flowers which do not open so much as those of the type, and are almost bell-shaped. They are of a pale fleshy rose-colour, and are extremely numerous, completely hiding the tree when fully in bloom; it is then one of the handsomest flowering shrubs in cultivation. Both varieties are multiplied from the suckers, which they produce abundantly. These should be taken off and planted in the autumn, as if this operation is delayed until spring they seldom push during the first year.

THE BANKSIAN ROSE.

I HAD almost begun to think that this Rose was forgotten; I therefore heartily welcomed your note respecting its splendour when in full bloom at different places. We have almost lost sight of it since the rage for perpetuals; still there are some old favourite Roses that thorough lovers of gardens will not banish to make room for new comers. I do not mean to say that flowers of the Banksian Rose are equal to those of *Maréchal Niel* or *Gloire de Dijon*, yet I cannot but think that a good spray, loaded with numerous neat and unpretending little flowers, cannot but call forth the admiration of the most enthusiastic of the hybrid perpetual growers. As a plant for covering walls, it ranks second only to the Ivy; and the fact that it is an evergreen makes it supersede all others for that purpose. Its distinct pale green leaves contrast well with the dark green of the Ivy when planted in sunless situations.

What I wish most particularly to observe is that the pruning of this Rose is too frequently misunderstood. Men and lads are sometimes sent to trim up the creepers around the house; and then it is that the growths are cut in to a certain distance from the wall, "to make it look tidy," without a knowledge or a thought of the particular requirements of the subject to be pruned. A clean sweep is made, and the result, in the case of the Banksian Rose, is a mass of dead spurs with only a few green twigs, which produce next year but a few isolated flowers. This Rose requires more the

treatment of a Tea or China Rose than that of a hybrid perpetual; little or no pruning being best suited for it. Young men, however, pay little attention to this, which is much to be regretted, as knowledge acquired when young is of the utmost importance in after years. When I was a lad of twelve years old, I was called to trim up some Banksia Roses growing on a cottage wall, attached to the front door of which was a rustic porch. I had daily passed the cottage for two or three years previously, and observed that the few blooms the Rose produced were only on the spurs that had been left uncut. This, then, laid the foundation for my management, and in the following spring it was covered with one mass of bloom from top to bottom. I would, therefore, say, above all things, keep the knife away, unless it is to cut out dead wood, if any. Use instead the finger and thumb, and by repeatedly pinching in the rampant shoots, which will never produce a flower (as in a perpetual Rose), they will then be reduced to bearing wood. If those watery growths be left till the autumn, and then cut to within a few inches of the old wood, they are sure to die, unless the wood is well ripened; but the flowering wood should be left almost untouched, to prevent an untidy appearance. Any bearing wood that becomes too long can be nailed in a little, fixing the nail and shred about half way up the branch, and allowing the remainder to hang loosely about.

I think it best, when they are required to cover high walls, to plant two near each other; one to be led away at once to half the height, and there to be trained as wanted, and the other to cover the bottom part of the wall; otherwise, in the course of some years, it may be found impossible to keep the bottom well furnished. I have always found the cream-coloured one a much freer bloomer than the white one. They like a rich sandy loam with an open subsoil to grow in. Where this does not exist naturally, it would be well to make some preparation for them.

J. TAYLOR.

Maesgwynne, S. Wales.

CENTAUREA RAGUSINA.

AFTER all we shall have some difficulty in beating *Centaurea ragusina* as a silvery bedding plant. Granted that it lacks the more elegant pendent growth of *C. Clementii* and *C. gymnocarpa*, it is yet by far the whitest, and unsurpassed for its effective silvery development. I have this season tried the new *C. Clementii*, but it lacks that fine silvery character that *C. ragusina* possesses in such a remarkable degree. In a riband border in my small flower garden I have used *C. ragusina* with great effect. At the back of the border there is a line of fine varieties of dwarf standard Roses on 2½ feet stems that all the season through have borne fine heads of bloom. In front of the Roses runs a line of *Perilla nankinensis laciniata* with deeply cut leaves, a form of this useful bedding plant well deserving of growth, having a much less formal and, therefore, a more effective habit than the common kind. Alternate with the *Perilla* are plants of dwarf double *Helichrysum*, that help to relieve its sombre aspect. Next comes a line of *Centaurea ragusina*, with nicely coloured plants of *Amarantus tricolor* worked in at intervals. In front of the *Centaurea* runs a line of *Alternanthera paronychioides*, each plant of which is now a beautifully coloured robust tuft of growth; and the margin to the bed is formed of a raised bank of *Sedum glaucum*, now in prime condition. I found, however, that I had just enough room to place between the plants of *Alternanthera paronychioides* some of the new variegated *Mesembryanthemum cordifolium*. This has become intermingled with its bright-coloured neighbour, and it also falls down over the charming greyish-green *Sedum*. It is simply necessary to keep the *Perilla* within bounds by occasional pinching, which also serves to make it branch freely. I scarcely know whether I shall be considered orthodox in the matter of hedging-out, but I like my combination immensely, and my neighbours are also pleased with it. I have "rigid lines" of colour, as they are termed, but the intermingling of other plants and flowers gives my border a mixed character to a certain extent, and thereby takes from its otherwise densely formal character.

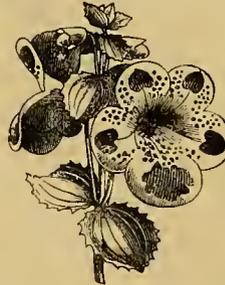
No amount of rain disfigures this *Centaurea*, which immunity from disfigurement in respect of rain has been pretty well tested during the present summer. Under the glowing sun, and under torrents of rain, the leaves have retained their purity, and their virgin silvery garb. Some people complain of the difficulty in propagating it, but I find it to be as easily propagated as the *Verbena*. My practice (I do not say it is the best, but I know it succeeds well), is to introduce the old stools of last summer's growth into a good brisk heat in February, at the same time depriving them of a great part of their foliage, and in a few days plenty of nice young suckers and side shoots put in an appearance, and these, if taken off with a small portion of the skin attaching to them, and inserted singly into small pots, are plunged in a brisk bottom heat, and in a few days rooted

sufficiently. When potted off, which operation requires to be performed with some care, as the roots are very tender, then if placed once more in a brisk heat, and when sufficiently large gradually hardened off, strong plants will be formed for placing in the open ground in June. This *Centaurea* comes perfectly true from seed; so does that closer growing variety of a dwarf habit named *compacta*.
Quo.

MONKEY FLOWER.

(MIMULUS).

THE numerous varieties of this plant, which have appeared from time to time in our gardens, are mostly hybrids of the Yellow Monkey-flower (*Mimulus luteus*). This, originally introduced from America, has become naturalized in many parts of Britain in moist boggy places, over which, when once established, it spreads with great rapidity, over-running and smothering any weaker plants that may come in its way. The garden varieties of which it has been the parent are almost without number, and vary much in the size and colour of the flowers, which are large and showy and of a bright yellow colour, blotched and spotted with various shades of rich brown. As it is the natural tendency of these plants to spread far and wide in rather weedy fashion, they are not to be recommended for the choice border, but they may with advantage be permitted to enliven with their gay colours the rougher parts of gardens and pleasure-grounds, where the soil is naturally



Garden Mimulus.

moist. Once planted, they will take care of themselves. The Californian *Mimulus cardinalis*, which is allied to the common Musk plant, is a very showy species with large red or scarlet flowers. The whole plant is clothed with long, whitish, glutinous hairs, and grows to the height of 1 or 1½ foot. Like all the other species, it flowers in summer, and is well suited for borders in moist soil. A handsome, dwarf, and very free-blooming kind is *Mimulus cupreus*, which grows from eight inches to one foot high. The flowers, which are large for the plant, are coloured both on the inside and out with yellowish, copper, or reddish brown (almost bordering on crimson), and have reflexed, velvety, and somewhat transparent margins; the lower lip is prominent, and plaited near the throat, which is dotted with purplish crimson. The leaves are oval—lance-shaped, and usually tinged with red. It is suitable for borders, in a position not far from the margin, and should be planted in light moist loam and peat. The Musk plant (*Mimulus moschatus*), one of our most popular window plants, is so well known as to need no description here. It does not appear to be quite so hardy as the other kinds we have spoken of, and sometimes suffers from undue exposure. Grown in a window-box, with a south aspect and in a sheltered position, care being taken to keep it well supplied with water, it will thrive to perfection, and when in flower will keep a large room constantly perfumed with its fragrance, which, unlike the scent of the same name obtained from animal sources, appears to be too refined and ethereal ever to become disagreeable to or cloy the most delicate sense of smell. A mixture of peat in the soil will be found very useful in keeping up a proper degree of moisture.

ACACIA LOPHANTHA.

ONE of the most pleasing features in the best flower-gardening round London this year is the good use made of this old-fashioned greenhouse plant. Young plants of it put out at about a foot high grow up three feet or more in the course of the summer, and produce such large, finely-divided, elegant, soft, green leaves, that the finest ferns look poor beside them. The leaves do not suffer in the least from any weather we experience, and retain their perfect freshness to the last. This *Acacia* is most easily raised from seed, and may be grown by everybody in possession of a warm frame or cool greenhouse. Indeed, the plants taken up in the autumn might be kept in a

house all the winter, and cut down shortly before planting them out in early summer. Few fine-leaved plants are so useful in the garden, affording as it does a peculiarly graceful type of foliage which we cannot otherwise secure so well. It is best to pinch off the side shoots, as by so doing finer leaves are obtained, but the effect is very good when the plants branch a little. Old plants, however, should not be used for the flower garden, as they do not grow with enough vigour. It is generally used in groups as the centre to medium-sized and small beds, but no plant will prove more useful for the graceful mixtures which are now beginning to be seen in our best flower gardens. Gladioli, for example, would show to charming effect judiciously intermingled with it. It is needless to add that seed of it is offered in nearly every catalogue.

ERIANTHUS RAVENNÆ.

A highly ornamental grass from South Europe, somewhat like the Pampas Grass in habit, but smaller in size, and frequently having violet-tinted leaves. The flowering stems grow from 5 feet to 6½ feet high; but as it only flowers with us in a very warm season, it must in England be valued chiefly for its foliage. It thrives but poorly on cold soils, and will probably not grow well north of London except in peculiarly favourable positions, and in well-drained free loams. It is fitted for association with such grasses as *Arundo conspicua*. A nice plant of it is at present in bloom in Mr. Chater's nursery at Cambridge, where it has thrown up twenty-six flower-spikes, the longest of which are 6 feet in height. The inflorescence has a purplish tinge; the foliage is broader than that of the Pampas Grass, and at Cambridge is said to keep longer green.



Erianthus Ravenne.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Polygonum sachalinense.—This new kind differs from all its allies by bearing huge leaves, so much so, indeed, as to make it worth a place as a fine-leaved hardy plant. It is quite hardy, and thrives perfectly with me in rich loam.—W. T.

Naturalisation.—We notice that the pretty blue annual Larkspur, *Delphinium Consolida*, is naturalised abundantly in one of the clumps in the Green Park. We also noticed recently, that varieties of *Lobelia speciosa* were naturalised freely in the grounds at Chiveden.

The Great Bindweed.—This fine hardy climber, of which there is a pink and white form, is a grand plant for walls, banks, hedges, etc. I saw a plant of it on a cottage near York the other day, which not only covered the wall, but grew on to the roof and there produced wreaths of large rosy cups. It is not wise to plant it where we fear an obstinate weed, but there are many positions in our gardens and pleasure grounds where it could do no harm.—R.

Diascia macrophylla.—A plant bearing this name is flowering on the rock-work at Kew, and has been in flower for these past two months. It has some resemblance to the *Alonsoa*, and is said to be an annual, but this plant lived out last winter, and appears to be a true perennial. This will probably prove a useful border plant, as its light rose-coloured flowers are produced in great abundance.—T. S.

Lythrum flexuosum.—This promises to become one of the very best species of this ornamental genus. Plants of it in the Tottenham Nursery have produced a mass of bloom for the past two months, and seem likely to continue in that condition for some time. It commenced to flower when only an inch or two high, and has continued growing and flowering up to the present time. It is now nearly 18 inches high.

Dicentra chrysantha.—This remarkable herbaceous perennial is yet blooming as vigorously with me as it does on its native Californian hills, and it has been in flower for the last eight weeks. The blossoms, which are produced in such abundance, have a peculiar and agreeable odour. In good soil the flower-stems reach a height of five or six feet. It is not, I think, suited for mixed borders generally, but a few tufts here and there among shrubs can hardly fail to please.—W.

Polygonum orientale for summer ornamentation.—I have a plant of this in my garden which was self-sown, and which I have well supplied with manure-water, and it has now reached 9 feet 5 inches in height; the girth of stem is 4½ inches, the length of leaf is, from stem to point, 1 foot 8 inches, and breadth near the base about 9 inches. I pinched off the laterals, and it has now several spikes of intense crimson filiform bloom. The lower leaves are apt to drop off, but with some bushy plants in the foreground, I think it would contribute to the enrichment of borders in the summer.—J. S. BAIGER, *Dorking*.

THE MARKET GARDEN.

PETER HENDERSON ON THE MARKET GARDENS OF LONDON.

[MR. PETER HENDERSON, of Jersey City, one of the most extensive and successful market gardeners and nurserymen in America, has lately been travelling in England, and the following is an extract from his first letter to our excellent contemporary the *American Agriculturist*. We can testify to the good results of using small handy ploughs and other implements (with us usually left to the farmers) in the market garden.]

"For years I have been anxious to see and compare the market gardens of London with those of New York, and have this week been able to do so. The extent and thorough culture of these gardens is something wonderful. One of the best we saw was in the vicinity of Tottenham, owned by a Mr. Hollington. It comprised about a hundred acres, every foot of which was planted in close crop, and, as far as could be seen, it would have been difficult to have picked up a bushel of weeds on the whole of the hundred acres. Mr. Hollington's success in twenty years equals, if it does not surpass, any of which we have record in America. When he took possession of these hundred acres, twenty years ago, he did so at a nominal rent, but without a lease, with the condition, however (a very unfortunate one for the owner), that the owner might enter upon possession at any time by paying him the value of the crop upon it. Mr. H., a man of great energy and shrewdness, at once saw his advantage, and took care that his grounds should at all seasons be cropped to the fullest extent. The result was that when the owner one day took it into his head to take possession, he discovered that he would have to pay more for the crop than the land was worth, and there was nothing for him to do but to sell to the tenant, or go on receiving the nominal sum for rent. The result was that Mr. H. bought the land, and is now perhaps the wealthiest market gardener around London.

"The next grounds we visited were those of George Steele & Sons, of Fulham, a point nearer to the City. These grounds were also models of order and neatness, although a week previous three-fourths of the workmen had struck for higher wages, and had gone to hay-making, leaving the owners in a plight. The garden comprised fifty acres, and the full number of hands was seventy-five. Now there were less than twenty, and these second-rate. Why, it may be asked, does it require seventy-five men for fifty acres? Simply because John Bull will not believe that land can be better dug with a plough and harrow than with a spade. I took some time to argue the point with Mr. Steele, and he declared that the morrow would see for the first time a plough in the market-gardens of Fulham. Once there, it will remain, for there is no one who has had practice with both methods but knows that no digging with a spade or fork can bring the soil to the mellow condition that the plough and harrow can. Upon grounds of the extent of Mr. Steele's the use of the plough will save full one-third of labour. Here, too, and at Mr. Hollington's, they were using another very primitive tool, which I did not venture to say anything about, for I thought I had trodden hard enough on John's conservative toes for one day. The tool in question was a planting-stick made out of a spade-handle, just such as was in use thirty years ago by the cottagers of England or Scotland to set out a few dozen Cabbage or Lettuce plants for their own use. Yet here, where millions on millions of plants had to be set out, no better implement had been thought of. The spade-handle dibber, even in the most experienced hands, is a wagging implement, and is hardly more to be compared in effectiveness to the pistol-handled dibber in use by the gardeners of New York than a sickle is to a cradle in a wheat field."

Salting Asparagus.—Salt may be spread on Asparagus beds at any time during the season in heavy or light doses, and without injury. When the salt is scattered on the surface in June or July, it will save considerable work all the rest of the summer in hoeing and weeding, and at the same time, plants, especially in young beds, will thrive under such treatment. The salt will not only furnish food, but will keep the surface moist. Five or six years ago, a friend recommended the application of salt to paths to keep down weeds. Experience proved that the salt effected this result the first season very well indeed, but the following year the weeds appeared to flourish. But what was strange about it was that for three years after one could see at a glance any morning just how far the salt was spread on each walk from the dampness of the surface, when the other parts of the walks were apparently dry. The same experiment was tried again still later, on another part of the garden, and with the very same result. It is therefore a reasonable conclusion to draw that salt has strong hygrometric power, and this moisture does have a marked influence on vegetable growth, and especially on the growth of Asparagus. It may be spread on very thick without injuring the plants. We have frequently put salt two inches in thickness on old Asparagus beds, without checking the growth, but there seemed no advantage in these heavy doses. A light sprinkling, say a bushel to two rods square, will be quite enough for all practical purposes. This may be applied, say every other year, to advantage. Some gardeners use a less quantity, and apply it every spring.

THE PROPAGATOR.

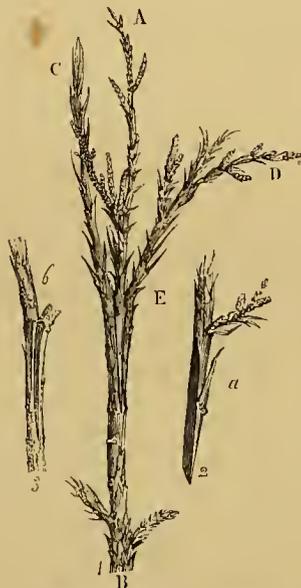
THE ART OF GRAFTING.

(Continued from p. 176.)

CLEFT-GRAFTING IN FORKINGS.

IN this method the scion is inserted into the stock at the point where a branch forks from the stem, or where two branches fork with each other. It is easy to produce this forking by a suitable pruning of the stem or branch at any time, or by making an incision over a bud, which will develop into a branch and form a forking. The scion is cut into a triangular wedge and inserted into the stock at the junction of the two branches; these branches are to be gradually shortened as the graft develops itself. Conifers, the Beech, the Vine, and the Oak, are the kinds which succeed best under this method.

FORK-GRAFTING OF CONIFERS.—Amongst resinous trees, the kinds which ramify on the young leading shoot, the varieties of Biota, *Chamaecyparissus*, Cypress, Juniper, *Retinospora*, Thuja and *Thujopsis*, may be propagated by this method. The scion (A) is inserted into the stock (B) at the point of



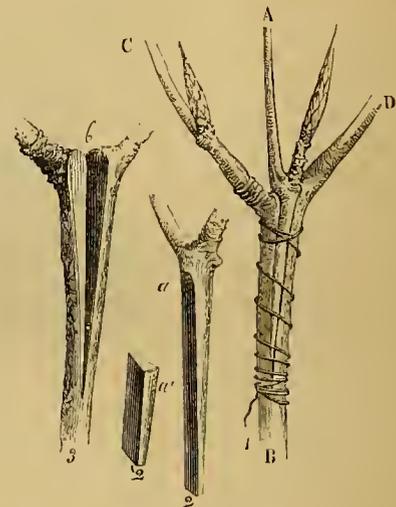
Fork-Grafting of Conifers.

junction (E) of the branch (D) with the leading shoot (C); the lower part (a) of the scion is cut on both sides, so as to have the internal part narrower than the outside, and the cut perfectly clean and level. A partial cleft is made in the top of the stock, at the place (b) of forking; the scion is inserted here, bandaged, covered with mastic, and surrounded with a leaf of whitey-brown paper. For this somewhat delicate work a blade like that of a penknife will be most convenient. Spring is the proper season for the operation. The sap must be attracted to the graft by shortening the branches of the stock, which are beneath it; their ends only need be cut off. An extensive lopping or clipping would be disastrous, and should never be resorted to in the case of young conifers.

FORK-GRAFTING OF THE BEECH.—The scion (A) is let into the stock (B) at the angle where the two branches (C and D) meet. The lower part (a) of the scion is cut into a thin wedge, of which a' is a section. The cleft (b) of the stock should not extend further than two-thirds of the diameter of the tree, so that the scion may be held firmly; however, it must also be bandaged and covered with mastic. If, instead of a cleft, a channel or groove were made, such as our illustration (b) seems to indicate, it would be merely additional labour without increasing the probability of success. The branches (C and D) are to be cut pretty long; they may be shortened afterwards as the scion develops itself, so that the two stumps may be removed in the following autumn, sup-

posing the grafting to have taken place in March or April. The Oak may also be grafted in this way. M. P. de Mortillet has for a long time propagated by this method the Oaks of America upon those of Europe. We have also succeeded with the European Walnut upon the American one. Perhaps the Chestnut and other hard-wooded trees may be thus grafted with equal success.

FORK-GRAFTING OF THE VINE.—This mode of grafting is performed over-ground in the forking of two branches. The scion, prepared with a sloping cut on both sides, is introduced into the stock by means of a partial cleft opened at the junction of two branches. These two branches are cut down to within about a foot from the main stem; and in summer the shoots which spring from them are to be pinched, but not cut away, with the object of drawing the sap towards the graft. After a year's growth the two branches are to be cut off level with the graft. The proper time for operating is in autumn, when the sap is about to decline, although there is a chance of succeeding in spring. The bandaging should be strong, and kept on for a long time, as the wood of the vine has a tendency



Fork-Grafting of the Beech.

to split. This method, recommended by M. Boisselot, of Nantes, enables us to change the nature of a vine-stock by inserting at its forkings scions of the variety which we wish to propagate; or we may thus bring together several varieties on the same stem.—*C. Baltet.*

(To be continued.)

Propagating Hollies.—Will you kindly say how I can propagate Hollies largely, as I am very fond of them?—*ILEX.* [The common Holly is generally propagated by seed. The berries are gathered in winter when ripe, mixed with double their bulk of dry sand, and turned over every four or five weeks, which considerably hastens the decomposition of the pulpy portion. The seeds are then preserved until the following winter, when they should be sown thickly in light, rich, porous soil, on an east border. Separate the seed from the sand previous to sowing, by means of a fine sieve. They seldom germinate sooner than May, and even then very unequally, but they continue coming up until the following spring. Those produced the second spring are considered as the principal crop. The seed beds should remain undisturbed for two years, when the young plants should be transplanted into nursery lines. The finer kinds of Holly are commonly grafted, the common one being used as a stock. Stocks of two and three years are lifted in the spring or autumn, potted singly into six-inch pots, and plunged outside in coal-ashes, tan, cocoa-nut fibre, sand, or some other material, or they sometimes have the benefit of a cold frame. In the following spring, after potting, should they be found to be sufficiently established, they are then taken into gentle heat, placed in beds under frames or hand-lights within the house or pit, and as soon as they are fairly started they are side grafted. After the operation has been performed they must be closely shaded for a time.]

THE GARDEN.

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“This is an art

Which does mend nature: change it rather: but
THE ART ITSELF IS NATURE.”—*Shakespeare.*

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THE SIX OF SPADES.

CHAPTER XXI.

*Mr. Evans on Shows and Showing.**

“MR. CHAIRMAN, and gents all,” said Mr. Evans, “this is the only meeting of the Six of Spades which I don’t go to quite so cheerfully as a wasp to a ripe Apricot. You see, I’m hardly much more of a scholar than the chap as only went to school one Tuesday, and master was absent a-measuring land, and when I’ve got to speak to them as has had good eddication, I feel about as comfortable as a tomtit a cherrupping to a lot of nightingales. Howsomer, I must take my part, and if you’ll excuse mistakes and plain speaking, I think you’ll find me there or thereabouts in facts, for I’ve been concerned with flower shows best part of my time, and after all, as I’ve heard my father say, an ounce of experience will win more prizes than two stone and a half of grammar.

“Consequently, and by your leave, Mr. Chairman and gents all, I will make a few observations, first, on the best way of getting up and managing a flower show, and secondly, on showing plants, and flowers, and ceters.

“Fine folks, as comes a yawning and a drawling, and a sniffing and a sneering, into a flower show, and as ups with an eyeglass to look at a plant, just under their noses, as if it was half a mile off, and then, having picked out the poorest specimen in all the place, pronounces the whole affair a failure,—they little thinks what time, and trouble, and what money too, has been spent to produce what they see, or rather I should say, what they won’t see, before them. Just let me try to describe what has to be done aforehand. First of all, some five, or six, sperrity young gardeners, led on by a brace of rich amateurs, as full o’ beans and as keen to show their paces as a pair of London Park osses. They meets and passes a resolution, that nothing but a flower show on an extensive scale can save the county from disgrace. They forms a committee, and they calls a general meeting. A few more lively florists turn up, together with a timber merchant, who proposes himself to the company as stage-manager, three publicans, glowing with desire to refresh the weary and athirst, a merry individual who has to do with tents, and who ‘hopes that having canvassed their votes, they will kindly vote for his canvas,’ and a party who has got the best field in all England for a flower show, and is agreeable to let it for two days on payment of half of its yearly rent. Then the editor of the local newspaper, who has just discovered all of a sudden what a tremendous interest he takes in horticulture, and who has offered to do all the printing at a mere nominal profit (of something like 300 per cent.), he writes a beautiful piece in the *Dullborough Eagle* about this influential, energetic, and successful meeting, and invites the earnest attention of his readers to an advertisement, which will be found in another part of its columns. Well, all goes on as smooth and easy as a new mowing-machine until the committee begins to collect subscriptions, and then there’s pebbles among the knives. I’ve been round myself, and though it’s very delightful to hear what a vast amount of charity there is in the world, as nobody knows nothing of, and what a many calls folks has, and how still they answers ‘em, it aint pleasant to arrive, as somehow one generally does, just after the last entry has been made on the subscription list, and there’s nothing for you but best wishes. I once went a-begging for a cottagers’ show to Sir Nathan Nipper, knight and drysalter, him as they sent for, when the great engineer swallowed the half sovereign, ‘for if it’s gold,’ they said, ‘Nat ’ll have it,’ and he says to me, ‘Mr. Bevins (the old runt knew my name well enough),

* I have transcribed Mr. Evans’s M.S. *verbatim*, but only *literatim* when his peculiar views in etymology, chiefly of a phonetic character, seemed more specially to illustrate the manner and the man.

I can assure you that it positively makes me tremble to think of the amount which I have given away during the last twelve months in charity.’ Whereupon, my mate, as formed along with me what our committee called a deppytation, a young clergyman, and one of the pluckiest gentlemen as ever I had the pleasure of meeting, he turns as red as a Tom Thumb Geranium, and out it comes—‘Sir Nathan,’ he says, ‘everybody knows that you have more than a million of money, and your head gardener told us this morning that you had just spent two hundred pounds in Orchids; and yet you cannot spare a sovereign in support of a poor man’s show. The best wish I can wish you is that you may really tremble as you pretend to do at your miserable list of charities. You need not ring the bell; we’re going.’ And oh, how pleased I felt, when we were fairly out of his park!

“Some refuses point blank. ‘We do not desire,’ they says, very cutting and haughty, ‘to have our gardens covered with fat Cucumbers, from 2 feet to 3 feet long, or to see one bunch of Grapes, which we may not eat, upon a vine, instead of six which we may. These flower shows demoralise the people. They make them idle, and discontented, and luxurious.’

“But there’s kind folks to be found for searching, and so at last perseverance wins, and there’s a sufficient fund, given or promised, to start the undertaking. Then comes the grand meeting of subscribers, ‘to arrange preliminaries, and to draw up a schedule. And sometimes this general meeting is not unlike a general engagement. Four more happy owners of the finest site in Enrope for a show appear upon the scene, several more licensed victuallers very anxious to cheer their fellow-creatures with the best of beer and spirits, rival contractors, opposition printers, and a new purveyor of tents. Then comes the question of music. Some says, Coldstreams, some says Grenadiers, and some says native talent. Farmer Horsman is for the Yeomanry, and Ensign Foote is for the volunteers, and Captain Port wishes to remind the meeting that no regiment in the service has a better bandmaster than Herr Herewig, of the Militia. Next round, and it’s generally a good one, is about amusements. Young Mr. Joy, having previously winked confidential at his friends, and pointed with his thumb in the direction of old Jaundice, rises to propose that the flower show shall be connected with a general gala, including a great variety of entertainments, and terminating in a brilliant display of fireworks. Old J. rushes at the bait, like a 10 lb. pike at a gudgeon. If, says he, this opportunity of refining the public mind by the exhibition of things beautiful, and, by the encouragement of an innocent recreation, is to be turned into an occasion of stuffing, and swilling, and smoking, and niggers, and pig balloons, and Punch and Judys, he must beg to remove his name from the committee.

“Then comes the schedule of prizes. Mr. Tank suggests that stove plants should always take precedence, and that it is very desirable to restrict competition to exhibitors residing in the county. Mr. Heath remarks that any old woman with a big boiler, and an old tooth-brush to rub off the scale, can grow them Crotons, and such like, and that the chief evidence of real talent is to be found in the successful cultivation of New Holland plants. Mr. Bunch, whose employer some three years ago erected a long range of vineries and peacheries, has always noticed that the British public take a wonderful delight in fruit. Mr. Moss observes that Ferns make a show by themselves. Mr. Kindly maintains that the chief object of the society should be to extend the love of the beautiful among the poor, and recommends prizes of an insane amount for bunches of wild flowers. Mr. Brierly would like to be informed whether the Rose tent isn’t always the most crowded of all, and proposes three silver cups for the Queen of Flowers. Mr. Tooth thinks that, when all’s said and done, a good mealy Potato takes a deal o’ beating, and so does peas and beans. You see, Mr. Chairman, and Gents all, the old saying is a true one, that—

‘Different people has different opinions,
Some likes Horchids, and some likes Hinions.’

But the question now is, not what this man or that man fancies the most, but what is best to be done in establishing a flower show; and on this point I have, if you please, a few words of advice to give.

“We must bear in mind, in the first place, that not many folks

are as fond of flowers as we are; that most people have no inclination, and, if they had, no time nor means to grow them to perfection; that they may love flowers, and not care for flower shows; that we are only riding our own hobby, and that neighbours prefer their own hacks. And so we mustn't be impatient in asking help, and must give to subscribers not only our thanks, but certain advantages with regard to tickets and early admission to the show.

"The committee should be formed of the best gardeners, and the best men of business, who will promise to attend, with a zealous amateur as honorary secretary and treasurer, and a good accountant, well paid, to do the work.

"A nobleman, or gentleman of high position, should be solicited annually to act as president, beginning with some one who will fill his house for the show, and set the example of giving a £5 cup. The public is still very fond o' Dukes, but if a Peer cannot be engaged, the best must be made of some young M.P. as durst n't say no for his life.

"As to choice of ground, it's best to get near a railway station, to have a good approach, and a good entrance, and plenty of room for your tents, bands, and cetera. I say tents, because it's a mistake to have a flower show under slates instead of under canvas. If there isn't a crowd, it won't pay; and if there is a crowd, there's no getting out of it. There's certain fishes as don't want to meet other fishes, and there should be plenty of sea-room for all. The best o' friends don't like being jammed together, like a load o' linseed cake, and if you gets a Whig boot on a Tory corn, or a Low Church elbow into Broad Church ribs, you'll interfere with harmony. I see a pair of ladies once, as weren't on speaking terms, squeezed together in the middle of a crowd until they looked like a Two-headed Nightingale. Then a band in a room! you might just as well bring our church organ and play it in this garden house. And, I'll just add here, being on music, if you've a decent band near home, stick to neighbours, and they'll stick to you.

"The next toepick on the tappy is the schedule or prize-list, and upon this, in my opinion, depends to a very great extent the success of the whole concern. Some committees seem to think that if they give plenty of small prizes, and so let everybody have a chance, as they say, they are sure to have a good display; but the consequence is that first-rate gardeners won't sacrifice their time or risk their plants for such paltry rewards; the public is disgusted with a collection of rubbish, and a lot of fourth-rate exhibitors go home and tell their friends that they have been and whopped the world, because their betters wouldn't take the trouble to cool their self conceit. I say the public is disgusted, as well they may be, because when folks goes out a visiting, they don't expect to be set down to gingerbread nuts and cockles, whereas, if you gives them a first-class round o' beef, there's few or none complains. And on this principle I always say, give a few fat prizes rather than a many lean ones. If you offer a prize of £10 for twelve stove and greenhouse plants, half of them to be in bloom; a £5 prize for a collection of fruit; and give a good prize for vegetables, you will have something worth seeing in the different departments of horticulture—something for your visitors to admire, and for your gardeners to copy. 'But £10 for a dozen plants!' I once heard a rich citizen say, 'Why, you'd buy the lot for £5.' I kept silence, but I thought that I should like to see the countenance of Mr. Thomas Baines, or of Mr. Benjamin Williams, on receiving the offer, and I doubted whether the politeness of Mr. William Cole would stand such a provocation.

"Start well, my advice is, if you starts at all; but don't go sowing cinders and expecting Kidney Beans. They wins who ventures most. Did you ever hear what Mr. Bruce Findlay, the Curator of the Manchester Botanical Gardens recommended the Council to do, when their shows was failures, and their funds was low? Why to give a thousand pounds in prizes, and to have the best National Exhibition which the best gardeners in England could produce, during the Whitsun holiday week. It was enough to set this Council's teeth a chattering, but Lancashire lads ta'es a deal o' scaring, and they makes answer 'We'll find the brass.' Well that show was a grand success, and has been every year since; the receipts last May, if I am not mistaken, being over £1600. And most of this in shillings, from hard working men and women! How bright the flowers must

seem to those poor factory hands, who've been stooping over warp and woof! How sweet the Roses must smell, after all that oil and grease! How merry must the music sound, after all that clank and whir! Brother Spades, I can't think of 'em without thanking God, that He has sent me to work in the fresh pure air among the flowers and fruits; and may His blessing be, as it surely will, on all those kindly men as make parks, and playgrounds, and plan holiday trips, for them as toils in the mill.

"Now a few words about arranging plants and flowers for a show. There should be, wherever there can be, and there might be at most public gardens, a place laid out for the purpose, with raised monnds, and sloping banks, surrounding, and broad gravel walks within, as at the Manchester shows, of which I have been speaking; at the shows of the Royal Botanic Society in the Regent's Park, and of the Royal Horticultural Society in the provinces. This ground may be made ornamental at all times, and is soon covered with canvas when it is wanted for a show. Where such advantages cannot be had, the most effective, quickest, and cheapest plan is to group the larger plants on the ground, having a good supply of spare pots and blocks for raising and tilting when necessary, and to protect them cords and stakes. Of course you must have stages, where you have no banks, for small plants, cut flowers, fruit, and vegetables, but the less timber you display the better. Three or four members of the committee, as have taste in arranging, should be told off on the morning of the show to superintend 'the staging.'

"As concerns amusements, it's no good a howling and a scrying because flower shows by themselves, with some few exceptions, won't pay expenses, or because nine-tenths of our fellow creatures prefers a balloon to a Bougainvillea, and likes fireworks better than Fuchsias. While you and I feast our eyes on the flowers why shouldn't Jack have his grin at the clowns, and Jill her dance on the green? Folks can be merry and modest too; and I've seen 'em a drinking and a smoking at the sign of the 'Six of Spades,' and elsewhere, without getting very drunk. If the rich thinks the poor has low tastes, let 'em join a little more in their amusements, and so raise 'em higher; but I'm inclined to fancy that there's less harm done in shooting at a target for nuts than in crippling pigeons for five pound notes; and I'm sure that there's more lying, and swearing, and robbing, and drunkenness at one of the great race meetings, with fine lords and ladies a looking on, than at all the flower shows and galas put together. Besides, if the people won't come to flower shows without some other inducements, how are we to teach them a taste for flowers? He who comes for the fun, is sure to walk through the tents, and many a man who left home to hear the niggers (why are they so genteel at St. James's Hall, and so 'vulgar' everywhere else?), has gone back to think more of his garden.

"And this brings me to speak of prizes for cottagers. Now you can't do a poor man a greater kindness, in my opinion, than by giving him a garden, and encouraging him in every way to take an interest in it; and after many years of experience I feel convinced that the best way to do this, so far as shows are concerned, is to have separate exhibitions for cottagers in the village school-rooms, and not to combine them with those larger meetings at which they cannot possibly receive the attention and the sympathy which they well deserve. White and black Currants don't get much notice, where there's Muscat and Hamburg Grapes, and nobody cares, after looking at Dipladenias and Allamandas and Ixoras, for the poor, little, window-plant. That posy of Mary Smith's, in the blue and white mug, with its bits of Totter-grass and Ferns, is as pretty in my eyes as anything in all the show, but nine out of ten, whom I ask to admire it, invite me, with a smile o' pity, to go and look at Lady Bigge's bouquet of Orchids. Some says, let the cottagers have a tent to themselves, and they sticks 'em in a corner, like a peepshow at a fair behind Wombwoll's menagerie; but I says let 'em have a show and a holiday to themselves, and let all their neighbours go and help 'em, not only with their money, but with kind words, which is better than silver, and brotherly love, which is brighter than gold. There ain't a happier sight to be seen than the people of one place, high and low, gathered together, with good will to each other in their

hearts. And we gardeners, mind you, have much in our power, and may do our part, with our spare seeds, and our spare plants, and that better knowledge which our practice brings.

"The best time for a flower show in the country is between the hay and corn harvests, about the beginning of July. It's a little late for plants, and a little early for fruit, but good prizes will bring both in abundance. And it's the best time for Roses. If this date is inconvenient, the second week in September, when the harvest is generally over, and the squires are home among the partridges, is a favourable time; and you'll have foliage plants, Ferns, Gladioli, Hollyhocks, Dahlias, Asters, and any amount of fruit.

"I've only one more hint to give about shows, before I speak about showing. Let it be well and widely known that tickets, which will be charged one shilling on the day of the exhibition, may be purchased at various places for sixpence, any day before it. When a treasurer has heard overnight that several thousands have been sold, his behaviour next morning under rain is beautiful."

S. R. H.

NOTES OF THE WEEK.

— WE learn from very good authorities in the north that various kinds of American Potatoes show a complete freedom from the disease.

— LORD CATHCART, president of the Royal Agricultural Society of England, offers a prize of £100 for the best essay on the Potato disease and its prevention.

— THE important question (as regards our great towns) of playgrounds for children is being mooted at Salford. The question of the formation of playgrounds for the children of the poorer inhabitants of the borough has been referred to the General Health Committee of the town for consideration.

— SOME idea of the weather in the West of Scotland this season may be gleaned from the fact that in a long border of the varieties of *Mimulus* in the gardens at Meadowbank, scarcely a flower has opened, and the plants have made feeble growth. These *Mimulus* usually delight in a moist border. Bedding-out in this region is of course a complete failure. Hardy flowers, however, have enjoyed the rain which we have had, and never were finer.

— THE excellent and hospitable arrangements made by the managers of the great fruit show at Glasgow for the convenience of the judges and others visiting the show, have been the subject of very general remark. It was contrasted by every visitor with the negative policy of the Royal Horticultural Society in allowing such matters to take care of themselves, so that the horticulturists at its great provincial meetings have no similar opportunities of pleasant intercourse.

— SEVERAL species and varieties of *Colchicum* are now blooming abundantly in Mr. Barr's trial grounds at Tooting. Amongst kinds not commonly seen in collections, we noticed *C. crociflorum*, a finely coloured sort, and chionense, with large and distinctly chequered flowers. Good companions to the *Colchicum* are *Merendera Bulbocodium*, an allied plant, and *Crocus speciosus*, a species which ought to be grown everywhere.

— WE have lately visited the Kibble conservatory now being erected in the Botanic Gardens at Glasgow, and were very much pleased with it. It is a very large and, for its purpose, suitably designed structure. It seemed to us likely to prove the most satisfactory building that we know of in which to hold a large flower show. With it Glasgow will soon be almost independent of the climate in this respect. The conservatory has a great advantage in opening on to the pleasant lawn of the Botanic Gardens, so that in fine weather the crowd may gather on the grass, as in the Regent's Park.

— THE *Papyrus antiquorum*, or Paper-reed of the ancients, appears to have become quite extinct in Egypt, the country with whose history it is most particularly identified. M. Delchevalerie, the head gardener to His Highness the Khedive, has found himself obliged to send to European gardens for specimens of the plant, to complete a collection of native products, which the Egyptian Government forwarded to the exhibition at Vienna this year. The disappearance of a plant which was once so plentiful by the waters of the Nile would seem to point to the fact that it was not originally a native of the country, but was introduced from some other region, and carefully cultivated for the sake of the uses which it afforded, dying out as it ceased to be considered a useful plant for the writing material which it supplied.

— NOTWITHSTANDING the unfavourable season which we have experienced, Tomatoes have never been known to be so plentiful in the London markets as they are at present.

— ONE of the best hardy plants at present in flower is *Clematis tubulosa*, an example of which, planted at the foot of a wall in the herbaceous ground at Kew, is producing its pretty blue tubular flowers so freely as to render it conspicuous even at a distance.

— AN enterprising Peach-grower, says the *New York Bulletin*, has sent a present of choice Delaware Peaches to Queen Victoria, per steamer. Shipping American Peaches to Europe is a bold experiment, and may lead to the development of a vast and profitable commerce.

— AMONG the most attractive herbaceous plants that have come into bloom within the past week is the beautiful Mallow Rose (*Hibiscus Moschentos*) and its allied species *H. roseus*. Several varieties of the former may be seen at Mr. Parker's nursery at Tooting, while the latter is blooming in the herbaceous ground at Kew.

— MR. ANDERSON, of Meadowbank, informs us that slugs and snails, with commendable taste, invariably devour sweet-scented plants and flowers first. According to his experience, if there is one such plant in a house, it is at once attacked. This almost excusable weakness on the part of our enemies deserves to be widely known.

— AT the meeting of the Royal Horticultural Society, held on Wednesday last, Mr. Wilson Saunders said that he had just received a letter from Dr. Sharpe, stating that the vine pest (*Phylloxera*), which has this year made such havoc in the vineyards in the south of France, had made its appearance in vine borders in Scotland.

— ONE of the finest stove plants now in bloom is the long-neglected *Pancreatium caribæum*. The great heads of bloom are nearly 18 inches across, and the individual blooms are nearly or quite one foot in diameter. It is most valuable for indoor decoration, as well as a queenly plant among the early autumn hothouse flowers and Orchids. There are now fine specimens in bloom at Meadowbank.

— ONE of the best plants that have come into bloom during the past week is *Funkia grandiflora*, which produces large, handsome, and deliciously scented pure white flowers. Of this we have received specimens from Mr. Ware, of Tottenham, as well as examples of various other good autumn-blooming plants, conspicuous amongst them being the white variety of *Chelone obliqua*.

— AT the meeting of the Central Horticultural Society of France in last March, M. Vavin recommended a novel mode of treating the Pampas-grass during the winter. This is simply to burn the exterior of the tufts in the end of autumn, and then leave them to themselves. Plants treated in this way, he says, will in the following spring push earlier and better than if they had been protected with mats or other coverings.

— M. BERNARDIN, Professor at Melle, near Gand, who has been for some time engaged in a minute investigation into the economical or useful products which the vegetable kingdom is capable of furnishing, has found that no fewer than 250 trees and plants afford more or less of tannin. It is perhaps remarkable that not one of these belongs to the Cryptogamous division.

— THE *Irish Farmers' Gazette* does not anticipate so disastrous a failure of the Potato crop as seems to be generally apprehended. Alarming statements have been made in so many forms, that the result is sure to tell for a short time on the Potato market; however, it is to be hoped that the panic will soon subside. A correspondent of the *Times* has collected a number of statistics from different parts of the north of Ireland, and they are much more favourable than could very lately have been expected.

— THE Brighton Aquarium bids fair to become, as it deserves to be, one of the most popular public resorts of that town. Ever since it has been opened it has been crowded with visitors, who seem delighted with its multitudinous inhabitants. The conservatory, too, connected with it forms an agreeable promenade at all seasons. The fern-clad rockwork at the Eastern end, put up by Pulham of Broxbourne, is so skilfully executed that one might fancy Dame Nature herself had been at work and fashioned it in her own way. A cascade which dashes its glistening waters to the ground, feeds a running streamlet that meanders gracefully by sedgy rock and tufted bank to its outlet.

— A MOVEMENT has been set on foot in the town of Haverfordwest, Pembrokeshire, to secure the site of a large piece of ground known as the Jubilee Gardens for the purposes of public recreation. The property is now in the hands of the Corporation, by whom it has recently been purchased with a view of improving the approaches to the town by widening the highway. In the fifteenth century Sir John Perrott gave a large amount of property for the benefit of the town, the rental from which now turns in about £300 per annum. Would it not be a gracious act on the part of the trustees of Perrott's

Charity if they perpetuated the memory of such a noble benefactor by purchasing the property and handing it over to the town as a place of recreation, to be called Perrott's Park?

— A NEW and extensive public park was opened by Prince Arthur at Leeds, on Thursday last.

— A CURIOUS statistician of Philadelphia demonstrated last summer that the sale of malt and alcoholic beverages at the bars in that city dropped off one-third when Peaches were plentiful, and that the cheaper this pleasant fruit became the smaller was the demand for fusil oil.

— MR. KENNEDY, of Covent Garden, has brought us some *Satyrums*, very well grown by a gentleman in Kent. These little Cape Orchids seem about as easily grown in pots as ordinary bulbs. In this instance they were potted in the poorest of soils—a mixture of roadside sand or gravel mixed with a little ordinary garden mould.

— SPECIMENS of a new and excellent Mignonette have just been shown to us by Mr. W. P. Ayres. They had been grown at Newark-on-Trent out of doors in ordinary strong rich loam, and are unusually vigorous and high coloured, the blossoms being of a warm reddish orange tint. This variety was sent out, we believe, some short time ago, by Messrs. E. G. Henderson, St. John's Wood.

— A "Flora of Liverpool" has been published by the Liverpool Naturalists' Field Club. The area included is within fifteen miles of Liverpool and two of Southport, and embraces some very interesting districts. The work has been performed by a committee of the society appointed for the purpose, with the assistance of amateurs and previously published records, which have all, when possible, been verified.

— OF the various collections of herbaceous plants that have of late quite doubled in numbers and value, none has increased more rapidly than that belonging to the Messrs. Rollisson at Tooting. Prominent among things now in flower there may be noticed the beautiful *Ourisia coccinea*, the dwarf and pretty *Silene Schafta*, *Francoas appendiculata* and *sonchifolia*, *Prunella pyrenaica*, a large and free-flowering kind. The New Zealand Daisy is said to be hardy there, and the curious *Tricyrtis hirta*. Plants of the large-leaved *Saxifraga peltata* are also planted out and are growing strongly.

— A CURIOUS species of massing may now be observed in Hyde Park, near the "Corner." The surface of the small beds, in which standard *Acacias*, *Rhododendrons*, &c., are planted, is covered with the blossoms of the handsome *Sedum spectabile*. The blooms are cut from plants growing in the reserve ground; the head of flowers is removed with a few inches of the stem, which is inserted in the ground like a cutting. Being of a succulent nature the cuttings seem to suffer no check, bloom almost as well as if on the plant, and furnish a very pleasing carpet of soft rose quite near the ground.

— ON Monday last a Court of "Attachment," and subsequently one of "Swainmote," in connection with Epping Forest, was held at the Town Hall, Stratford, by two of the verderers and judges of the ancient forest courts. Both courts were, however, again adjourned. It was mentioned, in the course of the proceedings, that certain persons were persisting in carting away and selling the soil from Wanstead Flats; that a considerable quantity of timber had been cut down and removed, and that other acts had been committed that were held to be illegal. The clerk of the Verderers' Court was therefore ordered to cause the forest officers to inquire and report upon these matters.

— A VERY fine collection of bedding and bouquet Dahlias is now in good bloom at the Royal Nurseries, Slough. Their neat, well-formed, small, and exquisitely coloured flowers are very useful in table-bouquet making, and other purposes for which cut flowers are used; they are also such profuse flowerers that they form admirable objects in the flower garden. It would be difficult to name them all, but the following, though not superior to some of the others, are very fine, viz., *Starlight*, *Little Valentine*, *Little Fairy*, *Little Love*, *Little Fireball*, *Little Lina*, *North Light*, *Little Dear*, *Little Beauty*, *Bird of Paradise*, *Coronet*, *Burning Coal*, *Criterion*, *Free Boy*, *German Daisy*, and *Rostritz Jewel*.

THE MANAGEMENT OF KEW.

We have received the following note from a young man who was formerly employed at Kew. It quite confirms what we have previously called attention to—the injudicious meddling in details of the head officers at Kew. In such a vast establishment it is folly for the director to interfere in details of culture, and to such interference may be laid the blame of the present state of the plants at Kew. It is, moreover, impossible for the superintendents to attend to greater interests properly if every little detail of culture is looked after by them. Let us

hear in mind that at Kew, in addition to the house-work, there is always a very large foreign correspondence to attend to. Then there is the exchanging of plants with botanic establishments at home and abroad, a duty which requires much skill and ceaseless attention. Without it the collection cannot be kept up to the mark, and it is of far more importance than any meddling with the details of culture. Even in a properly managed nursery the heads of departments wisely refrain from interfering. What would become of an establishment like Messrs. Veitch's, at Chelsea, if the heads of the house kept interfering with Mr. Dominy and the other able foremen of the establishment? The way is to select as good a man as can be found for each department, and hold him responsible for the condition of the plants, letting him adopt what practices he wishes to secure his end. And there is another reason, stronger than any of the above, why this is the best course, and that is, because a properly selected cultivator is certain to know much more of his work than the superintendent of the garden. Thus if one were happy enough to secure a Rose-grower from George Paul's, a filmy Fern grower from Backhouse's, or a Heath-grower from John Fraser's, they would be learned indeed in each branch who would be justified in interfering with such men.

"On looking over THE GARDEN, p. 176, I noticed Mr. Croucher's article on Kew, and I can affirm that a more truthful one could not be published. I would ask any practical gardener if good specimens could be obtained by pursuing the following system:—Some of the plants becoming too dry, the head foreman of the houses tells his assistant to water them, and the result is, that when the director or curator walks through the houses and finds them wet, after being newly watered, they threaten the young man in charge with dismissal if again found with a plant in the same moist condition. I have frequently saved the plants under my charge from perishing by giving them a good watering, and, at the same time, applying a surfacing of dry loam over the surface so as to avoid detection. This practice was most commonly pursued in the ferneries, where I have seen those water-loving plants flagging for want of that essential element, yet we dared not give it them until the curator and director had passed homewards. Should the young men employed in the plant houses at Kew follow the injunctions laid down to them, dead plants would daily present themselves, and after a time there would be but few left to die.—THOMAS LAMBERT, *Seaham Hall, Sunderland.*"

The exposure of such a state of things cannot be so agreeable to Dr. Hooker as the flattering pattings on the back which he has had at the hands of our contemporaries, and most assuredly it is far from pleasant to ourselves to say anything otherwise than agreeable of one who is really a most distinguished botanist, and who has done much good work in the cause of knowledge (or as it is commonly called, science); but our first duty in the matter is to point out that a mischievous system is at work in our national botanic garden before matters become much worse there.

HARDY PLANTS IN FLOWER ROUND LONDON.

(FROM SEPTEMBER 5TH TO SEPTEMBER 18TH, INCLUSIVE.)

BY OUR OWN REPORTERS.

Anagallis fruticosa	Crocus speciosus	Hibiscus Moscheutos	Schizanthus retusus
linifolia	Diplopappus rosus	Moscheutos	Scilla autumnalis
Artemisia glaciabris	linarietifolius	Imperata saccchariflora	parviflora
gnaphaloides	Eupatorium altissimum	Liatris pycnostachya	Solidago bicolor
gracilis	sessilifolium	Lobelia triquetra	Sternbergia lutea
maritima	Funkia grandiflora	Medicago arborea	Stipa filiculmis
Aster carolinianus	Galatella dahurica	Gladolius natalensis	Stokesia cyanea
turbinellus	Gladolius natalensis	Gutierrezia gymnosper-moides	Tricyrtis hirta
Cassinia Vauvilliersii	Cedronella cana	Gyneriun argenteum	Tritonia aurea
Cerinth auriculata	Chamostoma fastigiata	Heimia salicifolia	crocata
Chamostoma fastigiata	Colechicum Agrippine chionense	Helianthus latiflorus	Verbesina persicifolia
Coreopsis auriculata	Coreopsis auriculata	orgyalis	Vernonia ovalifolia
		Heuchera villosa	Wyethia ovata
			cuscutiformis

Plants in this list are almost without exception such as have come into bloom during the past fortnight.

WHAT IS A WILD GARDEN?

A LADY correspondent asks us what we mean by the term "Wild Garden," which is new to her. The Wild Garden is one where we plant, but do not mow, or rake, or trim, or stake; and wild gardening simply means the substitution of beautiful hardy plants for the weeds and brambles which cover such a comparatively large surface of ground near every country seat. It does not mean any interference with the cultivated or trimly-kept parts of the garden. It does not in any sense mean the giving of a wilder or a rougher aspect to portions of gardens designed to be "kept" in the ordinary way. I first saw the capacities of the system from observing certain hardy exotic plants thriving in half-wild places, where they had been thrown by chance, better than in the garden proper, and looking *much more beautiful*, because not surrounded by any kind of formality, but rambling about as happily as the Germander Speedwell on banks in spring. The plants I allude to were the creeping Forget-me-not (*Omphalodes verna*), the Ivy-leaved Cyclamen (*C. hederæfolium*), the Caucasian Comfrey (*Symphytum caucasicum*), with various other very ornamental hardy plants. Upon looking through our collections of hardy plants, and considering their habits a little, I was led to the conclusion that there are at least five hundred kinds of ornamental hardy exotic plants that will thrive perfectly, instead of the weeds, in such places as those above named, and that in all the rougher parts of our pleasure-gardens we may establish many charming aspects of vegetation which, after planting, will require no further attention. The accompanying woodcut will suggest one of the many aspects of vegetation we may obtain in this way in any copse, wood, or plantation. It shows the early summer aspect of a few tall Grasses, umbelliferous plants, Ferns, and climbers, which push up when the swarms of early spring flowers that may be grown in this way have passed away. It is a sketch from the hand of Giacomelli in "The Bird"—a sketch from the hand of one who catches the loveliest

aspects of plant life as truthfully as every graceful movement of the sweet singers of the air. But he would be great indeed who could depict the carpets of loveliest colour that may easily be produced by this system in spring and early summer in almost every pleasure-ground or grove. W. R.

Habits of the "Man Keeper."—The other day I had been tying up my Clematis Jackmanii, and was pleasing myself by thinking

how soon it would cover the top of my window with its beautiful purple blossoms. Vain hope! On going out next morning to look at my favourite, I found its branches drooping and withered, and on further examination I perceived that from the root 6 inches upwards it was despoiled of its bark. On looking about to ascertain the cause, I found a creature of the lizard tribe walking across the doorstep on its four tiny feet. In the head, colour, and markings of the body it much resembled an adder, the length of it being about 5 inches, half of which was taken up by the tail. My first impulse was to seize it and send it to you for examination. "Richard," I cried, "catch this creature," but he being carried away by rage immediately stamped upon it, crying out "a man keeper," which is the name given to it in this neighbourhood. My man asserts that they are generally found in the vicinity of adders, which may be the reason of their name. What I desire to know is, was this the culprit who deprived me of my Clematis Jackmanii?

—AN AMATEUR GARDENER, Colvend. [The "man keeper" of Kirkeudbrightshire is the common lizard, *Zootoca vivipara* of naturalists. It is a timid, gentle creature, that does no harm to anyone, and is utterly incapable of any such wanton mischief as tearing off the bark of a Clematis. It feeds upon insects, chiefly

diptera, but will not refuse grasshoppers or beetles. It is common in England and Scotland, and is one of the few reptiles that are found in Ireland. It does not occur much further south—not occurring in Italy, nor, we believe, in other parts of the South of Europe.—A. M.]

THE Earl of Darnley, we understand, has subscribed a donation of £50 towards a fund for laying out the grounds surrounding Rochester Castle as public gardens for the use of the citizens.



A Glimpse at the Wild Garden.

GARDEN DESTROYERS.

ECONOMIC ENTOMOLOGY.

In the spring of last year an offer of prizes for collections of economic entomology, to the amount of £20, was made by the Royal Horticultural Society, the result being sufficiently satisfactory to induce a repetition of the offer this autumn, full details of which are given at p. 165 of THE GARDEN. These prizes are offered in the hope of drawing attention to the serious injuries caused by the attacks of insects to timber, to plants used as food, and also to manufactured and other material, and are in connection with the Horticultural Society's collection of economic entomology now at Bethnal Green Museum. This collection is designed to illustrate the subject by the exhibition of injurious insects in their various stages of development, with specimens of the injured substances, both the insects and the substances showing the insect injuries being exhibited as far as possible in their natural positions and condition, and where this has not been found possible, by coloured drawings and models taken from life, accompanied by drawings showing the best practical remedy known. In some cases the cure for the evils is well known, but in others much has still to be made out of the life history of the insect before its ravages can be stopped, and it is hoped that by drawing attention to the subject much information, solidly valuable in a curative point of view, may be obtained, and that what is already known may be more generally applied.

The prizes offered this year are for collections of insects injurious to plants used for food, and also to timber and fruit trees, and it is proposed also (as last year) to select such specimens from the collections sent in for competition as may be considered to be desirable additions to the Society's collection of economic entomology, and to purchase them at a price to be agreed upon by the judges. The experienced entomologist would know well where to seek for the different kinds of insects under consideration; they may be found in every condition of the wood and bark, from the beetles that attack the young tree, to those which by simply hastening the fall of partially decayed woodwork by the removal of the still adhering particles, can scarcely be called destroyers; but seen from the point of view of economic entomology, the localities of the wood-destroying insects are not exactly what are commonly supposed, and a few hints may be suggestive to some of the competitors.

For specimens of *Anobium* the roof-timbers of cattle-sheds and the planking of granaries are excellent places of search, as also the riven wood used for guards to young trees, and the damaged parts of old Oaks, where the bark has been accidentally removed, and no pains taken for the protection of the underlying wood. For the long-horned beetle, *Rhagium bifasciatum* (very prevalent in the south-west of England, and singularly destructive to Fir timber exposed to weather, and just passing into a state of decay) the logs used for supporting stacks, and left unexamined year after year, are a favourite resort, where it may be found in the greatest profusion, as also in fences made of Fir poles, and in stumps of Firs left unremoved in plantations. Neglected Willow plantations will probably afford specimens in all stages of the beautiful musk beetle—the *Aromia moschata*—easily distinguished by its peculiar scent and brilliant green colour, and others of the timber-boring beetles, including amongst them, in some parts of England, the handsome *Prionus coriarius*, one of the largest of the British Longicorns, may be secured by search in old trees, and neglected and decayed timber, both growing and felled.

Of the *Lamellicorns* the stag-beetle is only too well known in timber in the south-east of England, and in the south-west the lesser stag-beetle, *Dorcus parallelipedus*, may be found in great numbers, in company with the *Rhagium bifasciatum*, in logs in stack-yards, and also in decayed Apple-wood.

For some of the bark-boring beetles, as the *Scolytus* and *Hylurgus*, no place can be found more likely to yield an ample harvest than the trunks of trees left unbarked and unlooked to in farm-timber yards till they may be needed for use. Here a hand may sometimes be run without difficulty under the bark of a young Fir, from one end of the tree to the other, showing the underside of the bark filled with the channelled workings of the *Hylurgus piniperda*, and the beetle in all its stages; whilst a similar harvest may be reaped of *Scolytus* destructor from the Elm trunks lying hard by. The bark of the Oak, the Ash, and the Apple will similarly afford their respective species of *Scolytus*, and other allied genera may be found more especially frequenting the bark of various species of Fir.

The practice also of piling together masses of wood too much decayed to be of use even for burning, and logs which would not pay for splitting, is as beneficial to the collector as baneful to the neighbouring plantation, and the thoughtful naturalist observes with regret the nucleus of a constantly growing evil, where a little attention in removing and burning insect-infested bark, destroying

useless wood, and occasionally applying a coat of tar to the exposed surfaces of timber would save present waste and future damage.

Although the largest proportion of bark and wood-destroying insects are found amongst the Coleoptera, yet some of the timber-boring insects amongst the other orders equal them in destructive powers, from their great size and their long duration of life in the larval state, whilst others are interesting for their beauty or variety.

Amongst the Hymenoptera the *Sirex gigas* may especially be named, sometimes seen hovering in such quantities amongst Fir logs in timber yards that a dozen or two of specimens may be secured in an afternoon; a smaller kind of *Sirex* is equally hurtful to Firs, and an allied kind is found in the Willow. The jet ant is particularly partial to old Poplar trees, and occasionally in the autumn Ash saplings suffer much from the attacks of hornets, which remove large patches of the bark, apparently with the object of imbibing the juices flowing from the edges of the wounds.

Amongst the Lepidoptera the larva of the bee-clearwing may be found frequenting the roots of the Aspen and Poplar, and that of the hornet-clearwing under the bark of the Sallow. The huge caterpillar of the goat-moth may be found in many kinds of the most valuable timber-trees, which frequently perish under the attacks of the great numbers which, piercing the base of the tree and the upper part of the roots at the ground level, often continue their ravages for years; its ally, the *Zeuzera Aonli*, or leopard moth, may especially be found in the larval state in Apples and Pears. Scarcely a tree can be found where a careful search in any injured part would not reward the naturalist with some observation of interest, but time would fail for anything like a detailed list of insect timber-destroyers; for those who may desire a guide in their search beyond the localities given in many of our best entomological manuals, the lists of insects injurious to each British tree given with the account of it, in London's "Arboretum et Fruticetum" will prove a valuable assistance.

In undertaking the work of illustration, many kinds of insects may be well displayed in the ordinary way, by fixing specimens of them in their fully developed stage, properly spread on cork, and securing specimens of the larvæ and pupæ in small phials, the phials filled with some preservative, as spirit of wine or Canada balsam, and neatly labelled with the description of the contents. Where the insect is too small to be pinned without injury, as with many of the bark beetles, specimens of it may be given in these phials. In many cases, however, the matter is much more clearly conveyed to the mind of the spectator by giving specimens of the injured substance with the hurtful insect fixed on it as when in life. For instance, in illustrating the damage done by *Scolytus*, a piece of Fir-bark, showing the characteristic channellings, with the beetle in its natural position in its own galleries, shows the greater part of the subject at a glance. Similarly a piece of *Sirex*-bored Fir with a specimen of the insect fixed on it, and another as in the act of escaping from one of its borings, a section of a beam of timber eaten by *Anobium* ("wormed" in common parlance), or a few inches of an Ash sapling with a hornet on it, as in the act of removing the bark, would all tell their own tale, and interest many observers who would not be at the pains to understand the ordinary arrangement, by the unmistakable manner in which each specimen would tell its own history.

For ordinary specimens, pieces of bark or thin slices of wood about three inches square would answer the purpose, and the insects may usually be firmly secured by passing one pin through them in the usual way, and also one on each side of the thorax, the parts of the pins that show being neatly removed by a pair of cutting nippers, and where there is difficulty in preserving the larvæ and pupæ they may be well represented by accurate drawings or, better still, by plaster of Paris models.

E. A. O.

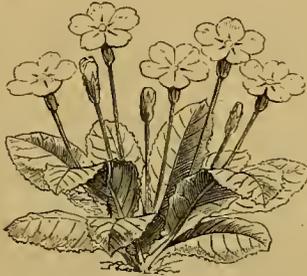
The New Vine Pest.—The *Phylloxera vastatrix* seems to be fully justifying its portentous name. This terrible insect has, according to the *Journal d'Agriculture*, invaded Portugal and reduced the yield of Grapes to 1-25th. A vine-grower who used to make seventy pipes of wine, has had but one this year. The vines of the Swiss cantons of Schaffhausen, Aargau, Zurich, and Thurgau are affected. The scourge cannot fail to spread from thence to Alsace and to Germany; Hungary begins to feel its effects; Spain is at present clear, but its two neighbours can hardly fail to transmit the plague to the Spanish vineyards. Science has hitherto proved powerless to cope with the destroyer of property so extremely precious, and, says the French journal, since we must trust to chance for deliverance from the *Phylloxera*, the press should draw attention to all proposed means of cure which seem at all practical. The last suggested comes from Austria; it is recommended by M. von Hamm, Aulic Counsellor at the Ministry of Agriculture in Vienna; it rests on the anthelmintic virtues of oil of garlic. This remedy, like many others which have been proposed, has the drawback of being difficult to apply on large tracts of ground; but we must not grudge the means, since the very existence of the vineyards is in question.

THE FLOWER GARDEN.

PRIMROSES.

Few of our British wild flowers possess greater charms of association than our common Primrose, which year after year unfolds its cheerful blooms among the earliest harbingers of the returning life of spring. Scattered over copse and bank and hedge-row, it is perhaps the most conspicuous and plentiful of our early-blooming native plants, uniting a rare purity and delicacy of flower with a vigorous development of foliage. There are many varieties of it to be met with, differing in the colour of the blossoms, which exhibit various shades of brown and purple, but none of these are more charming than the yellow-flowered type, although very desirable for the variety which they afford. We remember once seeing the ground under the trees in a large shrubbery thickly carpeted with these coloured varieties which, having been allowed to grow undisturbed for many years, had spread in all directions, and from repeated natural cross-fertilization, had produced an amazing variety of tints in the flowers. The double Primroses of our gardens have all been derived from this source, and are very handsome and effective plants. They are easy of culture, and thrive best in a shaded position, and in a strong clayey soil.

The Cowslip and Oxlip are also occasionally found with a tendency towards a brownish purple tinge in their flowers.



Common Primrose. (After Smee.)

This, as in the case of the Primrose, may perhaps in the first instance be attributable to some peculiarity in the soil, just as we see that in certain soils the flowers of Hydrangeas become blue. Whatever may have been the original cause of the divergence, the red, purple, and other shades of the garden Primroses appear now to have become fixed and permanent.

Two other very pretty British Primulas are *P. farinosa* and *P. scotica*. The former, which is confined to Scotland and the northern parts of England, grows from 6 to 8 inches high, bearing its lilac flowers in an umbel like the Cowslip. It is a very suitable plant for rock-work, and sows itself freely. *P. scotica*, which does not occur south of Scotland, resembles the preceding species, but is a much smaller plant, with flowers of a bluer tinge. It is also a suitable plant for rock-work, but is not at all so vigorous a grower as *P. farinosa*.

The numerous Alpine Primulas which have been introduced of late years are distinguished by the intense and vivid colouring of their flowers, which are also usually very large for the size of the plants. The colours are various shades of reddish purple, and the varieties in the habits and species of the plants are very numerous and interesting. The special culture required for these has been fully given in "Alpine Flowers," in which several hundreds of the best rock plants are also described.

W. P.

TRIAL OF ANNUALS.

I AM aware that "Annuals" are not now-a-days the fashion, but some of your readers may not object to hear something about the following, which have been tried here this season:—

Asperula azurea setosa.—A recently introduced variety of the familiar "Woodruff," but devoid of the peculiar hay-like odour of that plant. Flowers abundantly through the summer, and seen in masses is very pretty. The colour of the flower is a neutral grey blue.

Centranthus macrosiphon bicolor.—This variety is dwarfier in habit than its parent, producing dense heads of white and bright pink

flowers, curiously intermixed in the same compound raceme. It is very pretty and suitable for cutting for water.

Godetia, "The Bride," New crimson-spotted, and *Godetia Schaurini Nivertiana* appear to be the same thing. Flowers French-white, with a large deep crimson spot nearly covering each petal. Very pretty and showy, growing from 18 inches to 24 inches high, and flowering very freely.

Chrysanthemum carinatum hybridum fl. pleno.—Of various colours; the disk made up of small petals in the place of the usual fistulose florets. Novel, but no improvement upon older varieties.

Coreopsis tinctoria pygmea.—The old favourite with a much dwarfier and more compact habit; a decided acquisition.

Collinsia heterophylla.—Not so good as *C. bicolor*.

Collinsia bicolor candidissima is a good snow-white variety.

Convolvulus cupianus.—A dwarf, small-flowered kind, with lilac-blue flowers, the tube of which is pale yellow with a dark brown spot in each of the five segments; pretty.

Dianthus (sinensis) siderocaulis.—A robust variety of Indian Pink; certainly an improvement.

Leptosiphon densiflorus albus.—Not new, but the best of all the *Leptosiphons*, and fine as a mass.

Linaria bipartita splendida.—Flowers deep purple; lip clear orange; elegant and pretty for table nosegays.

Nigella damascena, "Pure White."—A novelty from Paris. The old-fashioned Love in a Mist, but pure white; very fine.

Reseda odorata pyramidalis gigantea.—One of the best of the new Mignonettes; habit of plant, erect and robust, spike long, flowers very large, and by the development of the red petals at the expense of the other parts of the flower, of a warm brick-red colour; very fragrant, and doubtless fine for pot-culture.

Whitlavia gloxinioides.—*W. grandiflora* with a white tube and throat; this lights up the flower and makes it much more attractive; fragrant and very early blooming.

Schizanthus (humilis) papilionaceus.—A truly butterfly-like variety of this pretty annual. The individual flowers are larger, ranging in colour from pale lilac to deep purple, spotted all over with black dots, and each segment lit up with a deep yellow blotch at its base. Habit of plant, pyramidal and compact; a charming novelty.

Xeranthemum compactum, "Imperialis."—An imperial purple variety of this pretty everlasting flower. Treated with dilute acid, or strong white vinegar, the flowers assume a deep rose pink colour, which is permanent, and thus a bouquet can be formed of lilac, rose pink, and white *Xeranthemums* for winter vases.

Viscaria oculata cærulea.—A blue sport of this very lovely annual.

Viscaria oculata cardinalis.—A deep crimson-scarlet variety of the same. Both the above are very lasting, and form beautiful beds.

Tropæolum "Von Moltke".—Of the Tom Thumb section; flowers deep "Solferino" colour, quite new in shade.

Candytuft (Bunyard's Selected Scarlet).—Bright crimson, almost scarlet; habit compact and robust.

Amarantus atropurpureus.—"Love lies Bleeding," with purple flowers and bronzy purple foliage.

THOMAS BUNYARD, JUN., *The Rose Nursery, Ashford.*

VARIEGATED TROPÆOLUM "MINNIE WARREN."

I CONSIDER this to be one of the most beautiful and useful variegated plants for the decoration of our summer gardens that has been introduced for many years. It was sent out in the course of the summer of 1871 by Mr. Cattell, of Westerham, and was exhibited at one of the meetings of the Royal Horticultural Society at South Kensington, where it was awarded a First-Class Certificate by the floral committee. The high price of half a guinea at which it was at first distributed doubtless prevented its immediate acquisition by many, who did not care to give so comparatively large a sum for a soft-wooded variegated plant, whose merits as an ornamental bedding plant were yet almost unknown. Among the number so prevented from acquiring this novelty I was myself included, but when in the early part of this summer I saw it offered for the same price per dozen as it had the former year cost per plant, I at once determined to give it a trial, and despatched 5s. 6d. to defray the cost of half a dozen, and 3d. for their postage. When the plants reached me I found them to be all nice little bits, most of them having single stems somewhat drawn, which I thought would be checked by stopping; and to this operation I subjected them at once. I put in the tops as cuttings in sand in a shallow saucer without drainage, well soaked with water, and placed them in an intermediate stove, but without any bottom heat being applied to them. In five or six days I was pleased to find every one of my tops well rooted, thus proving the variety to be at all events most easily propagated. When the proper time arrived, the dozen plants were put out round a small square bed, with a hollow pillar in the centre well covered by *Clematis rubella* and Prince of Wales, which

produced a mass of their lovely blossoms during the summer. The plants grew quickly and evenly, forming close round cushiony tufts, quite indicating their claim to belong to the Tom Thumb section of *Tropæolum* (*Nasturtium*), of which I entertained strong doubts when I first received them as single stems. During the whole of this unusually cold and wet summer the twelve plants have not produced among them more than half a dozen flowers, which have been, of course, at once removed, as this is essentially a foliage plant. The variegation is also extremely constant, as I have only had to remove a single green leaf from my dozen plants. They have been greatly admired by all who have seen them, having been frequently taken for low-growing, tufty, variegated *Geraniums*, and now, after the removal of more than 200 cuttings, they are still beautiful objects round the bed, as they are so free in habit, and break so readily when cut, that in a day or two after the plants have been stripped for cuttings they have covered themselves with beautiful young growth. It is altogether a most valuable addition, and great acquisition to our stock of ornamental variegated bedding-plants, and should, I think, be extensively cultivated for ribbons and pattern beds for the coming season of 1873. I may add that I think the variegated form of *Viola cornuta*, exhibited for the first time in a group of new plants by Messrs. Carter, at the Royal Horticultural Society's Country Exhibition, held at Birmingham on the 25th of June last, and to be distributed by that well-known firm next spring, will form an exceedingly pretty companion to Minnie Warren, being of an apparently neat habit of growth, with an evenly diffused and most distinctly marked pure white blotching, which is said to be quite constant.

W. E. G.

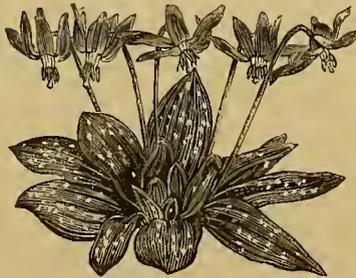
THE DOG'S-TOOTH VIOLET.

(*ERYTHRONIUM*.)

This fine old early-flowering border plant, which is now too much neglected, possesses a two-fold beauty of flower and foliage. Its broad, handsome, oval, pointed leaves, finely marbled and spotted with reddish-brown, are of themselves sufficient to fix the eye and challenge well-deserved admiration even in the absence of the flowers; while the latter, with their large, reflexed, purple or lilac petals, and graceful drooping *pose*, are not surpassed by many of the introductions of more recent times.

The species best known in English gardens, and of which we give an illustration, is *Erythronium Dens-canis*, the Dog's-tooth Violet, which owes its popular name to the fancied resemblance which its long white bulbs bear to the shape of a dog's tooth. A still greater stretch of fancy is needed to see what it has in common with the Violet, except perhaps, whatever similarity the drooping attitude of its flowers may, at first sight, suggest. It blooms in March and April; the flowers are solitary, on stems about six inches high, and are usually of a purplish rose-colour on the outside, and white or pale rose within. There is also a variety with white, another with flesh-coloured, and another with pure rose-coloured flowers, but none of these is more beautiful than the old and well-known form. It is a very effective subject for the rock-garden, the mixed border, and in beds of spring flowering and bulbous plants, attaining greatest development and beauty in a moist, sandy, peaty soil, or in light sandy loam mixed with a large proportion of well-decayed leaves. It occurs chiefly as a native of South Europe, but has also been found in Siberia.

Another species, *E. americanum* (common in the northern parts of North America, where it is known as the "Yellow Adder's Tongue") sends up flower-scapes from 6 to 9 inches long, each bearing a light yellow flower (often spotted with brown near the base) of about the same size as the flower of *E. Dens-canis*. The leaves of this species are of a pale green, mottled and dotted with purplish and whitish marks. The positions and treatment recommended for the preceding species are suited for this also, and both are easily multiplied by separation of the bulbs every third or fourth year.



The Dog's-tooth Violet.

Many-flowered Sunflower.—One of the most conspicuous objects among hardy perennials in the nursery grounds round London at the present time is the double-flowered perennial Sunflower known as *Helianthus multiflorus flore pleno*. This is a plant that does not receive the attention that from its free-flowering qualities it deserves. For the mixed border it is a capital plant, I wonder that it is not used as a substitute for the yellow *Dahlia*, a purpose for which it is eminently adapted, for the flowers are large, very double, are abundantly produced for a long time in succession, and the plant is thoroughly hardy, and may be readily increased by division. I have lately seen it planted in beds, along with *Dahlias*, in a London square, and it withstood the smoke and dust better than the latter; it flowered much freer, and was to my mind a much better plant than the *Dahlia* for London. It may also in some places be seen used in the borders of shrubberies, for which it is also more valuable than the *Dahlia*, as it thrives better, and does not require annual planting. This plant commences to bloom in June, and continues flowering until October.—T.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Giant *Enothera* (*E. gigantea*).—This plant, in the south of France, attains, says the *Belgique Horticole*, the height of 30 feet, and bears a spike of pale yellow flowers, which is sometimes 20 feet long. Although of such giant stature, it is an annual, and of very easy culture.

Tilling's *Mimulus* (*M. Tillingi*).—An annual, discovered by Dr. Tilling on the Sierra Nevada of California, and brought into notice by Mr. Thompson, of Ipswich. It has a very branching pyramidal habit, and grows over 3 feet high. The flowers are numerous and of a golden-yellow colour. It thrives well in positions exposed to the sun.

Belladonna Lily.—Several varieties of this beautiful Lily (*Amaryllis Belladonna*) are now blooming finely in a narrow border in the front of a lean-to house at Messrs. Osborn's, Fulham. This is the proper position for many such subjects as this, and persons having spaces unoccupied in front of their houses would be abundantly repaid for their trouble in introducing a few plants there—of course giving them a suitable soil to grow in.

***Origanum Dictamnus*.**—In the herbaceous border at Chiswick this is now one of the most charming things we have seen for some time. It is rarely found in borders, and is not hardy everywhere, but this plant has lived out for the last three winters at least. It is so distinct in aspect from any other border plant we have, that it well deserves a place on warm, well-drained borders or in the rock-garden. A good example of it may also be seen in the herbaceous ground at Kew.

***Tigridia conchiflora*.**—I have this at present in beautiful condition. The roots were planted in May, and for the last six weeks there has been a continual succession of large and fine flowers, and they will continue till cold weather sets in. They have never done so well with me as this year, and I fancy it is owing to their having had a little shade. Being short of room I planted between the rows a quantity of *Balsams*, and it is quite a sight to see the golden blossoms peering above and amongst the varied coloured *Balsams*.—PETER BARR.

***Polygonum Brunonis*.**—A fine tuft of this dwarf species of knotweed is now flowering freely at the Exotic Nursery, Tooting. The flowers are of a pale rose or flesh colour, and are borne in dense erect spikes nearly eighteen inches high, which are more abundantly produced than I ever remember to have seen them. When seen in such a condition as the above, it forms a first-rate subject for the mixed border, and it continues to bloom more or less throughout the summer months.—S.

The Corsican *Arum* (*A. corsicum*).—A singular-looking plant from Corsica and the Balearic Isles, growing 4 inches or 5 inches high. Each plant consists of a single hastate leaf (of a dark green colour marked with lighter veins) and its accompanying spathe-stem. The spathes, which appear in autumn, are of a deep brown colour, and are curiously hooded or arched at the top; the spadix also being curved in a similar manner. The plants usually grow in natural groups, and, at some distance, the spadices look very much like the heads of a number of birds resting among the leaves.

***Lobelias* among Bedding Succulents.**—In the interesting display of bedding at Mount Merrion, near Dublin, succulent plants are much used. One border planted with these is dotted here and there with bosses of *Lobelia pumila grandiflora* in regular open lines. The curious forms of the succulent plants require to be seen close at hand, and borders of dwarf succulents only are apt to be ineffective a little way off, but the little colour this gives has a charming effect—an effect which would probably be weakened, if the colour were in greater excess.

Golden Thyme.—Will you kindly state whether or not the enclosed *Thyme* is the variegated one that has been so much spoken of this year?—Mrs. H. [Your plant is the Golden Thyme, a yellowish variety of the Lemon Thyme, and quite a different one from the variegated Thyme sent out lately by Messrs. Fisher & Holmes. If we mistake not, the Golden Thyme is one of the many variegated subjects found by our correspondent, Mr. Elliot. It was distributed by Messrs. Henderson, of St. John's Wood, who now have very pleasing specimens of it in their nursery.]

Hemp.—In May or June, I forget which, I cleaned out a birdcage in my garden, and soon after observed that four of the seeds had germinated, and were growing close together. I transplanted them, not knowing at the time what they were. I now find that they are hemp. Three of the plants are over 9 feet in height, and one measures 10 feet 11 inches, with a girth of 5 inches at the second joint from the ground, and with laterals five feet long. All of the plants are in such full and profuse flower, that I anticipate a great yield of seed.—G. B., *Reading*. [Hemp is as well worth a place in the garden as many of our more popular sub-tropical plants.]

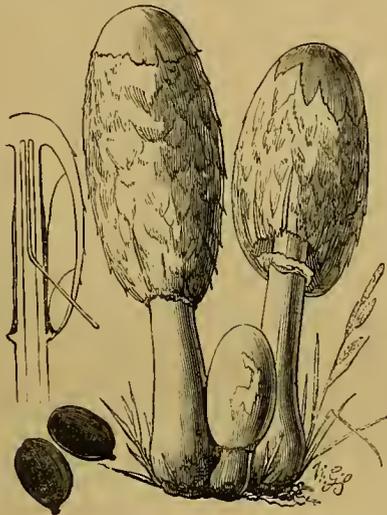
***Asclepias speciosa*.**—In a recent number, one of your correspondents refers to this plant as if it were distinct from *A. Douglasii*. They are, however, mere synonyms for the same plant, the former name being Dr. Torrey's, the latter, Sir, W. Hooker's. It resembles *A. Cornuti*, but has looser umbels, and rather larger flowers. I do not find that the umbels of either are much concealed by the foliage until their flowering season is partly over. Have your readers observed what efficient fly-traps the said umbels are? I have rarely examined my plant of *A. Cornuti* without discovering numerous unhappy flies, struggling to extricate their slender limbs from the corona.—W. T.

THE HOUSEHOLD.

THE MANED AGARIC.

(COPRINUS COMATUS).

THIS very elegant Agaric has also been called *Agaricus cylindricus*, Schœff; *A. typhoides*, Bull; *A. fimetarius* Bolt. It is common throughout the summer and autumn months, on road-sides, pastures, and waste places. It is extremely variable in size. Its general appearance is so distinct and striking, that it cannot possibly be mistaken for any other Agaric. It grows so abundantly on waste ground near dwellings and farm-yards that it may be, says Dr. Bull, called the "Agaric of civilization;" and for both these reasons it is most valuable as an edible Agaric. If its merits were known, it would be eaten as freely as the common field Mushroom. "The maned Mushrooms," Miss Plues has well said, "grow in dense clusters, each young plant like an attenuated egg, white and smooth. Presently some exceed the others in rapidity of growth, and their heads get above the ground, the stem elongates rapidly, the ring falls loosely round the stem, the margin of the pileus enlarges, and the oval head assumes a bell-shape; then a faint tint of brown spreads universally or in blotches over the upper part of the pileus, and the whiteness of its gills changes to a dull pink. A few more hours and the even head of the pileus



Coprinus comatus (Maned Mushroom). Pastures, parks, and roadsides; summer and autumn; colour, snow-white; height, 5 to 12 inches.

has split in a dozen places, the sections curl back, melt out of all form into an inky fluid, and on the morrow's dawn a black stain on the ground will be all that remains. And so on with the others in succession."

Pileus cylindrical, obtuse, campanulate, fleshy in the centre, but very thin towards the margin. The external surface is soon torn up into fleecy scales, with the exception of a cap at the top. Gills free, linear, and crowded, quite white when young, becoming rose-coloured, sepia, and then black, from the margin upwards. They then expand quickly, curl up in shreds, and deliquesce into a black inky fluid which stains the ground. Stem of a pure white, four to five inches high, contracting at the top, and bulbous at the base, hollow, fibrillose, stuffed with a light cottony web. The bulb is solid and rooting, the ring is moveable.

Opinions on the Merits of Coprinus comatus as an Edible Funus.—"Esculent when young."—*Bekeley.*

"Young specimens should be selected."—*Badham.*

"No despicable dish, though perhaps not quite equal to the common Mushroom."—*M. C. Cooke.*

"If I had my choice, I think there is no species I should prefer before this one: it is singularly rich, tender, and delicious."—*Worthington G. Smith.*

Dr. McCullough, Dr. Chapman, Elmes Y. Steele, Esq., and some other members of the Woolhope Club, hold Mr. W. G. Smith's opinion as the result of considerable experience. It

must be noted, however, that when too young this Agaric is rather deficient in flavour, and its fibres are tenacious. Its flavour is most rich, and its texture most delicate when the gills show the pink colour with sepia margins.

Modes of Cooking the Coprinus comatus.

"The best and simplest method is to broil it and serve on toast in the ordinary way. It may be added also with great advantage to steaks and made-dishes, to give flavour and gravy.

Comatus Soup.—Take two quarts of white stock, and put in a large plateful of the Maned Agaric roughly broken out; stew until tender; pulp through a fine sieve; add pepper and salt to taste; boil and serve up hot. Two or three table-spoonfuls of cream will be a great improvement. The Agarics for this soup should be young, in order to keep its colour light and good. The Maned Agaric is recommended on all sides for making ketchup, but it should be quickly used, and the ketchup quickly made.

PROFESSOR NEWMAN ON VEGETARIANISM.

FROM A LECTURE DELIVERED AT GLOUCESTER.

(Concluded from p. 236.)

Now lest you should pity our peasants too much, I must state that we have the decisive testimony of the most eminent scientific men to the sufficiency of a purely vegetarian diet; men, not themselves vegetarians, nor intending to urge the practice. Our society has printed a handbill, with extracts from Haller, Liebig, Linnæus, Gassendi, Professor Lawrence, Professor Owen, Baron Cuvier, and many others. Hear a few illustrations how those speak who mean to be our opponents. Dr. S. Brown writes: "We are ready to admit that vegetarian writers have triumphantly proved, that *physical, horse-like strength* is not only compatible with, but also favoured by, a well-chosen diet from the vegetable kingdom, and likewise, that such a table is conducive to length of days." Dr. W. B. Carpenter writes: "We freely concede to the advocates of vegetarianism, that as regards the endurance of physical labour there is ample proof of the capacity of [their diet] to afford the requisite sustenance." He adds that if it is sufficiently oily, "it will maintain the powers of the body at their highest natural elevation, even under exposure to the extreme of cold." Thus the labourer, according to these high authorities, is not at all dependent on flesh meat. And of this we have abundant proof in foreign nations. We have no stronger men among our flesh-dieted "navvies" than the African negroes of the U.S. who were fed, while slaves, on Yams, Maize, and other vegetable food. We perhaps cannot anywhere produce a class of men to equal the porters of Constantinople. The London *Spectator*, not long back (though it is anything but vegetarian in purpose) wondered at the ignorance of men who doubted whether vegetarian food was compatible with the greatest strength; for a Constantinople porter (said the writer) would not only easily carry the load of any English porter, but would carry off the man besides. Mr. Winwood Reade, a surgeon who has travelled much in Africa; Mr. A. F. Kennedy, once Governor of Sierra Leone, and Capt. P. Eardley Wilmot, attest that the Kroomen of Western Africa are eminent in endurance. Mr. Kennedy says "their power and endurance exceeds that of any race with which I am acquainted." Mr. Winwood Reade expresses himself even more pointedly: "The Kroomen are, I believe, the strongest men in the world." Yet the Krooman, he adds, lives on a few handfuls of rice per day; and rice has not been supposed by our chemists to be at all favourable to human strength. They depreciated it, as giving too great a proportion of animal heat; but they did not know that animal heat gives vital force also. It may be said that these cases belong to hot climates; but indeed Constantinople can be anything but hot. And we can further appeal to Northern Persia, where the winter is intensely cold. The English officers at Tabriz, the northern capital—who for a long series of years had the drilling of Persian troops—were enthusiastic in their praises, and testified that they make the longest marches, on nothing but bread, cheese, and water, carrying three or four days' provisions in their sash. These, however, are not strictly Persians, but

of Turkoman race. I did not need to go to Persia for illustration. The Italians of the north, or anywhere on the Apennines, would have served my argument. Bread, with figs or raisins, are their sufficient food; and they were old Napoleon's hardest soldiers round Moscow. Indeed, in every civilized country the strongest class of men are the peasants, who are everywhere all but vegetarians. Dr. E. Smith, who reported to the Privy Council on the food of the three kingdoms, comes to the conclusion that the Irish are the strongest, next to them the Scotch, next the northern English; after, the southern peasants; lowest of all the townsman; and that their vegetarianism is graduated in the same way, the strongest being the most vegetarian, and the townsfolk, who are the weakest, being the greatest eaters of flesh. I do not mean to assert that the diet is the only cause of strength or weakness: it is sufficient to insist that vegetarianism is compatible with the highest strength. The old Greek athlete was a vegetarian: Hercules, according to their comic poets, lived chiefly on peas pudding.

But what of health? The testimony of scientific men is here still more remarkable. Haller, the great physiologist, writes thus:—"This food then, in which flesh has no part, is salutary, inasmuch as it fully nourishes a man, protracts life to an advanced period, and prevents, or cures such disorders as are attributable to the acrimony or grossness of the blood." That eminent physician, Dr. Cheyne, of Dublin, who some forty years ago was at the head of his profession, declared:—"For those who are extremely broken down with chronic disease, I have found no other relief than a total abstinence from all animal food, and from all sorts of strong and fermented liquors. In about thirty years' practice, in which I have (in some degree or other) advised this method in proper cases, I have had but two cases in whose total recovery I have been mistaken." A remarkable instance is attested—that of Professor Fergusson, the historian—who at the age of sixty-one had a dangerous attack of paralysis. He called in his friend, Dr. Black, the celebrated discoverer of latent heat. Dr. Black, though not a vegetarian, prescribed total abstinence from flesh-meat. Professor Fergusson obeyed, and not only recovered entirely, and never had a second attack, but was a remarkably vigorous old man at ninety, and died at ninety-five. In such cases I think we have an explanation of the success of some things called quack remedies—as, the *grape-cure* of the Germans. I am ready to believe that it is not so much the Grapes that cure, as the abstinence from a gross and evil diet. Dr. A. P. Buchan teaches that a diet of farinacea, with milk and fruits, is the most hopeful way of curing pulmonary consumption; many examples of such cure in an early stage of the disease, says he, are recorded. He adds:—"If vegetables and milk were more used in diet, we should have less scurvy, and likewise fewer putrid and inflammatory fevers." Drs. Craige and Callen are very strong as to the power of vegetarianism to preserve one from gout. Drs. Marcet, Oliver, and other physiologists, declare that human chyle, elaborated from flesh meat, putrefies in three or four days at longest; while chyle from vegetable food, from its greater purity and more perfect vitality, may be kept for many days without becoming putrid. We need not therefore wonder that vegetarians are so little liable to fever, or to any form of putrid disease. It is asserted indeed, that such a thing is not known, as that a vegetarian should suffer cholera. On the other hand, it is also asserted that none but vegetarians have attained the age of 100; undoubtedly a majority of centenarians have held to this diet.

Now I know some persons will answer quickly: "I do not want to live to a hundred;" but remember, I pray you, what such longevity implies. The man who lives to a hundred is generally as strong at eighty, and as perfect in all his faculties, as are the majority of men at sixty-five; and he is not as much worn out at ninety as the man who lives to eighty-two or eighty-three is at eighty. It is not the last seven years of the centenarian which give him advantage, but the twenty years which precede these seven. However, wish what you please about long life; it remains, that long life, if it exist in a class of men, implies that that class excels in vital force; is superior therefore in health, probably in strength; and health is more valuable than strength. Once more; reflect what is contained in the avowal that pulmonary consumption is best treated, and

is sometimes cured by abstinence from flesh-meat and wine. Consumption is notoriously a disease of weakness. Hence we must infer that more strength is given by a vegetarian diet than by that which is called stimulating. All the arguments converge to the same point. Vital force is measured by length of life, and by power of recovering from dangerous wounds. Vegetarianism conduces at once to length of life and to success in such recovery. I have mentioned that Dr. Cheyne and Dr. Black trusted in it as a recipe when the constitution was broken down; how much more must it be a preservative of strength to the healthy? Dr. S. Nicolls, of the Longford Fever Hospital, wrote in 1864, after sixteen years' experience in the hospital, that the success of treatment by a total withdrawal of flesh-meat and of alcoholic liquors gave him the greatest satisfaction. The long and the short is, that whatever is inflammatory is weakening; the highest vigour is got out of that food and drink which gives the maximum of nutrition and the minimum of inflammation. We allow ourselves to be cheated by calling inflammation stimulus. Further, I will ask, of the English race, what portion is most unhealthy? Beyond question, the English of the United States. And they are also the greatest flesh-eaters.

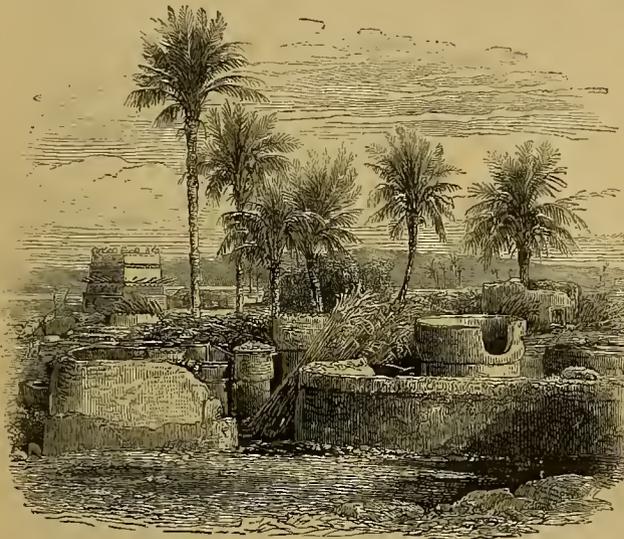
I have tried your patience long, in the attempt to develop facts. It remains to draw my conclusion. I first have to insist, that ever since 1847 we have been striving to reverse the natural current of affairs—an enterprise which will necessarily entail disease and a vast train of calamity. In the first forty-five years of this century, the population of the three kingdoms more than doubled itself in spite of emigration. Great areas of land were broken up for cultivation, partly under the allurements of a high price for corn, partly to take advantage of the Tithe Commutation Act. But after the abolition of the Corn Laws in 1847, the increased prosperity of the manufacturing towns led, not only to an importation of corn, but also to a remarkable demand of the artizan population for flesh-meat. Cattle were brought from abroad in great numbers. Prices still went up. A great stimulus was given to cattle-breeding. The markets of England were supplied from Scotland and Ireland as well as from foreign ports, until in Ireland land was thrown out of culture, and taken up for grazing. The clamour for flesh continuing, we bring it from Australia and South America, artificially preserved. From importing instead of raising food, our worst evils are increased. Rustic industry is not developed. The new births of the country can find no employment there, and flock into towns. Masses of population become liable to starvation from a displacement of foreign markets, or from the imprudence of their employers; and when personal prudence has less reward, improvidence prevails. Town-life is less robust; sanitary conditions are harder to fulfil. A nation fed from foreign markets suffers convulsion through other people's wars. And when more and more the land is occupied by large estates, by parks, by wildernesses kept for sheep or deer, while huge towns prevail, we have the type of national decay. Our statesmen look on helplessly, while a robust peasantry is supplanted by a feeble and unhealthy town-population. England will not long hold up her head in Europe, if she allow the system of empty country and ever-increasing towns to prevail. There are other causes of the evil, I am aware, besides this zeal for flesh-meat. We have to open our eyes to more things than one; and a hard battle perhaps has to be fought. But in regard to flesh-meat, each family has the remedy in its own hands. The waste of its resources is caused by an attempt to bring back the condition of things belonging to comparative barbarism, and make us a flesh-eating nation again, when the era of flesh-eating is naturally past.

A New Salad.—Amongst the already great variety of vegetables which, in addition to the universal Lettuce, are used by the French as salads, a fresh subject has made its appearance, and is highly spoken of in the pages of the *Revue Horticole*. This is *Centranthus macrosiphon*, which hitherto has been only cultivated for the sake of its handsome rose-coloured flowers, but now advances a claim to be considered a really good material for a salad. As it belongs to the Valerian family, it might be supposed to possess some of the properties of the Corn-salad so popular with the Parisians, but it appears to combine all that belongs to the Corn-salad with a peculiar slight bitterness which imparts to it a most distinct and agreeable flavour. It is very easy of cultivation, being sown permanently in beds like the Corn-salad, and care being taken not to cover the seed too deeply. It is best to allow the plant to be pretty well grown before cutting it, as its peculiar flavour is more pronounced in the mature than in the young leaves.

THE DATE PALM.

THE traveller who ascends the Nile with the anticipation of experiencing a new sensation from a sight of the cataracts, is not at all sorry to find the monotony of its level banks broken from time to time by the appearance of groups of tall Palms in close proximity to some village of wretched mud-built dwellings. These are what we may term orchards of the Date Palm (*Phoenix dactylifera*), a tree at once the most extensively cultivated by, and the most useful to, the inhabitants of Egypt and Northern Africa. It is a beautiful tree, with a stem a foot or a foot and a half in diameter, and from 50 to 80 feet in height, shooting up in a cylindrical column without branch or division, and of the same thickness throughout its whole length. From the summit it throws out a magnificent crown of pinnate leaves, from 8 feet to 12 feet long. These are of a bright, lively green colour, and are more stiff and firm than the leaves of any other tree. The fruit is produced in bunches or clusters at the base of the leaves.

What the Cocoa Palm is to the natives of other regions, the Date Palm is to the fellahs of Egypt, rivalling the former in the variety of the uses which it affords. In Upper Egypt many families subsist almost entirely on Dates, of which vast quantities are gathered every year, and dried in the sun upon mats. The new fruit comes in about the end of June, and the



A Date Orchard.

harvest lasts for two months. In addition to its importance in supplying one of the principal means of subsistence, there is hardly any part of the tree which is not utilised. The stem is split up and used for rafters, posts, railings, and other coarse purposes. The fibrous integument which covers the stem at the base of the leaves is made into ropes, mats, and various other articles of domestic use. The cordage of the ships navigating the Red Sea is almost exclusively made of the inner fibrous bark. The leaves, from their toughness, afford good material for the construction of coarse ropes, baskets, and panniers. The pith is partly farinaceous, and soluble in water, yielding a nutritious substance, which resembles sago, but is inferior in quality. The sap of unfruitful trees is fermented into a sort of wine, and when distilled forms the ardent spirit known as rask or arrack. The heart, or conical tuft in the centre of the crown of leaves, is used as a vegetable, but, like the wine, is only obtained from unproductive trees, as the death of the tree follows in both cases.

When we consider the marked absence of other esculent vegetables, which could not exist in the regions where the Date Palm is most abundant, and the many important uses of life which it supplies, we can hardly fail to be struck with the bountiful provision for the wants of man which Providence has made, even on the verge of the desert. The Date Palm is a dioecious tree, having the male flowers on one plant, and the female, or fruiting ones, on another. Although male and

female trees may grow close together, it has been found necessary, in the case of cultivated trees, to fertilise the female artificially, which is done in the following way:—A male spadix which has not yet burst its spathe is selected, taken out of the spathe and cut lengthwise into pieces, care being taken not to injure the flowers. A piece of this is then placed lengthwise among the ramifications of a female spadix in flower, and fructification seldom fails to ensue. The necessity just mentioned appears singular, as the wild Date Palm requires no such aid.

THE FRUIT GARDEN.

FRUIT VOTING IN AMERICA.

THERE is a plan pursued in America, at the great Pomological meetings there, of each State voting on the character of varieties of fruits cultivated in it. These votes are very conveniently tabulated in the excellent report of the American Pomological Society, so that one can at a glance learn the value of any known fruit throughout the length and breadth of the States, by looking over a few pages of the catalogue. A like plan would suit admirably in this country. A single cultivator may make a mistake or misjudge; he may derive his knowledge from an experiment performed under unusual circumstances, and give results widely different from those obtained by others. But when there are a large number of experimenters who all tell the same story, we may safely conclude that the summary of these results should be entitled to consideration. These remarks are suggested on looking over the list of those sorts of Pears, foreign and native, which have been sufficiently tested to merit a place in this condensed report. This list embraces ninety-one varieties, and the report on their character and adaptation to the different regions of the country, is all found on four partly-filled pages.

The Bartlett (our Williams's Bou Chrétien) of course heads the list for general popularity. It receives votes of approval from thirty States and Territories, and of these seventeen give double stars, or marks of high commendation. There is only one State that does not give a vote for the Bartlett, and that is Minnesota, which names only Flemish Beauty and Bloodgood, doubtless on account of their superior hardness, and their endurance of the cold winters. The only States or Territories not represented at all are those lying in the great western and south-western regions, including such as Montana, Arizona, New-Mexico, Dakota, &c. Among the thousand or more described varieties of the Pear, where shall we find another that will receive such a vote as the Bartlett, and what will that be? Next to the Bartlett is Beurré d'Anjou. This receives twenty-six votes, one-half of which are those of highest commendation, indicated by double stars. This vote comes from most of the States where Pears have been cultivated—north, south, and west. Next is the Seckle, with twenty-five votes—twelve with double stars and thirteen single. Scarcely behind the preceding in numbers are Duchesse d'Angoulême, Beurré Giffard, Bloodgood, Buffum, Doyenné d'Été, Beurré Diel, Dearborn's Seedling, Belle Lucrative, Flemish Beauty, and Louise Bonne of Jersey, which have from twenty to twenty-four votes. But, with the exception of Belle Lucrative, Duchesse d'Angoulême and Flemish Beauty, they have nearly all single marks, indicating a moderate appreciation of their quality.

THE MUSTANG VINE.

(VITIS CANDICANS.)

As a supplement to the excellent article on the native Grape vines of the United States, given at p. 163, the following account of the Mustang, by Mr. Peter Wallace, who has seen a good deal of Texas lately, will be read with interest. It introduces us to a really distinct species of Grape, remarkable for producing comparatively large fruit in quantity:—

"A year ago, as I was riding through a few hundred miles of forests in Louisiana and Texas, I found vines of the Mustang, apparently as old as the forests themselves, clinging to and flinging their arms from Oak to Pecan trees, Elm, Gum, or white Ash, as they came in the way; and wherever they laid hold, like Sinbad's

rider in the Arabian tales, they fixed themselves with so firm a grip that neither wind nor storm could shake them off, and there they will ride till time or the feller's axe clears them away. One hot day I had ridden thirty miles through the tall prairie grass, when we made the timber of the Brazos River bottom; and judge my surprise when, for the first time, I saw a grove of Mustang vines and, what was better, Grapes. Our Mexican ponies were jaded out, and so were we; and without ceremony we took off the saddles and turned them out to find water and food, knowing they would return at sunset for their corn. After half an hour's rest we commenced a ramble through the vine-covered forest. It was vegetation run mad with luxuriance; nothing escaped the vines' spreading arms; from the low undergrowth to the mightiest Oak or Pecan tree, the Mustang vine was master of the situation. The Grapes certainly were not equal to our Black Hamburgs, or even to West's St. Peter's, but for about ten minutes I thought them most delicious. I then began to make comparisons, which at any time are said to be odious, but in this instance rather ungrateful, as the fruit had been very welcome to us. Some of the stems were 2 feet and upwards in circumference at the base. The leaves of the Mustang are less indented than those of most of the European kinds, and have a thick white downy covering underneath. The fruit is as black as jet, the pulp firm, and less juicy than in any Grapes cultivated in Europe; the bunches would average about half a pound in weight, but hung in such profusion as to create astonishment. After wandering about for half an hour, we came upon a crowd of settlers with their waggons, men and women busy collecting Nature's wild harvest of Grapes. On asking them what they were going to do with them, with a look of surprise they replied, "Make wine, to be sure! what else?" I replied, "Those Grapes won't make good wine, will they?" An old gentleman said, "Saddle your horses and come to our rancho to-night, and you shall judge for yourselves." Their Grape gathering was a barbarous process, and commenced by their first reaching all they could from the waggons, after which some of the more youthful of the party climbed the trees and lopped off the Grape-covered branches with billhooks, and the bunches were gathered when they fell to the ground. By the time the waggons were loaded our horses were saddled, and we all made tracks for the rancho, and after supper discussed several bottles of the old ranchman's wine, which was superior to the ordinary ports sold in this country. The process of wine-making was much the same as that followed in wine-growing countries; but the juice of the Mustang, being thicker than that of European Grapes, had to be diluted with water to bring it to a pleasant beverage consistency. I have drunk two kinds of wine manufactured from the Mustang, one resembling the ordinary kinds of Burgundy, and the other, above-mentioned, resembling port wine. Quantities of these Grapes rot every year, or are eaten by racoons and birds, simply because people have not time to gather them, and the high value of labour of every kind in a sparsely populated country like Texas would render the wine dearer than that imported from wine countries; but there is no doubt that the Mustang will furnish the settlers in the neighbourhood of its habitats with plenty of wine till they can introduce better kinds from Europe or the other American States, and as a stock to work new kinds upon it will be invaluable. The Mustang vine is rather erratic in its habits, springing up only in localities where the soil is suitable, and leaving spaces of twenty miles of the same forest between its favourite haunts unnoticed. It is found on the Brazos, Trinity, Rio Grande, and Colorado rivers. I was told of another native vine, bearing small bunches of white Grapes having a sweet Muscat flavour, but did not meet with it."

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Eating Monstera Fruit.—Some of your readers would confer a favour if they would state how the fruit of *Monstera deliciosa* is used, so as to avoid the unpleasant sensation of stinging left on the palate after eating it.—*INQUIRER*.

Outdoor Grapes in Italy.—I have Grapes planted on the south side of a north wall in my garden. They are of different kinds, half of them being the French Chasselas; these latter have grown most luxuriantly, but yield little or no fruit, only five or six berries arriving at maturity, while the rest remain as they appear after they are set. I have tried to remedy this propensity to make wood by pruning the vines very long, but with no good effect. The remainder of the vines on this wall produce most abundantly, though under the very same conditions. These vines are planted three feet apart, and the wall on which they grow is about 7 feet high. What can I do to cure this propensity to make wood?—*P. P.*

Apples as Food.—The following extract from Sir John Sinclair's "Code of Agriculture," published just half a century ago, is worth attention at the present moment, and may perhaps incite some to take every care of their Apples:—"It is said that the importance of Apples as food has not hitherto been sufficiently estimated. The labourers in Cornwall consider them to be nearly as nourishing as bread, and more so than Potatoes. In the year 1801, when corn was so scarce and dear, Apples, instead of being converted into cider, were sold to the poor; and the labourers asserted that they could stand their work on baked Apple without meat, whereas a Potato diet required either meat or fish."

ASPECTS OF VEGETATION.

GIANT REEDS AND CLIMBERS IN SOUTH AMERICA.

To those who have never seen more than the aspects of vegetation of our northern clime, the spectacle of unlimited growth and boundless powers of life exhibited in the tropical regions of South America, in such a scene as is represented in our engraving must be more than suggestive.

With the hot sun and abundant moisture of the valley of the Amazon and most parts of the northern district of South America, the aspects of plant life are at once novel and surprising. Wonderful force of growth, amazing development of beauty, strange and quaint revelations of the possibilities of vegetable mutations, at once impress the traveller with the conviction that a new world of existence has opened for him, and that here there is not only a field for study but an ample arena of enjoyment.

Our illustration shows a scene of vegetable life, wild in its aspect, but truthful in its details, which exhibit the distinctive features of the tropical parts of South America. The graceful luxuriant climbers which assert themselves above everything, with an impetuous growth and a lovely gift of bloom, embrace the stately forest trees in such a way as Humboldt describes when he says, "Creeping plants often reach from the ground to the very summit of the trees, and pass from one to another at the height of more than one hundred feet, so as to deceive the observer, and lead him to confound the flowers, the fruit, and the leaves which belong to different species. So thick and uninterrupted are the forests that were it not for intervening rivers, the monkeys, almost the only inhabitants of these regions, might pass along the tops of the trees for several hundred miles together without touching the earth."

In our cooler and quieter climate it is not possible to realize anything of this kind, but we can, with the assistance of good photographs and engravings, arrive at a perception of things as they exist there as near as possible to the truth. The *Arundo Donax*, the largest Reed known in our latitude, and which many of our readers may have seen attaining a height of 8 feet or 10 feet, reaches a much greater height and development in the south of Europe. But this is a dwarf in comparison with the dimensions of the Reeds which fringe the margins of the rivers in the tropical districts of South America. There, in keeping with the huge proportions of the surrounding vegetation, the Reeds are amongst the most conspicuous and striking objects, towering aloft in rivalry with the forest trees themselves, and becoming Bamboo-like in their solidity and massiveness of growth. Something of this comparatively gigantic development is well exhibited in our engraving, as well as the graceful effect produced by the contrast of their erect arrowy stems with the more spreading and horizontal limbs of the various trees which line the bank of the river.

COWSLIPS.

Oh! fragrant dwellers of the lea,
When first the wild wood rings
With each sound of vernal minstrelsy,
When fresh the green grass springs!

What can the blessed spring restore,
More gladd'ning than your charms?
Bringing the memory once more
Of lovely fields and farms.

Of thickets, breezes, birds, and flowers;
Of life's unfolding prime;
Of thoughts as cloudless as the hours;
Of souls without a crime.

* * * * *

I care not that your little life
Will quickly have run through,
And the sward, with summer children rife,
Keep not a trace of you.

For again, again, on dewy plain,
I trust to see you rise,
When spring renews the wild wood strain,
And bluer gleam the skies.

Again, again, when many springs
Upon my grave shall shine,
Here shall you speak of vanished things
To living hearts of mine.

MARY HOWITT.



GIANT REEDS AND CLIMBERS IN SOUTH AMERICA.

THE GARDENS OF ENGLAND.

THE FRUIT HOUSES, CHATSWORTH.

THE fruit houses at Chatsworth, to which, on this occasion, I intend to confine my remarks, are placed within the walls of the kitchen garden, which is a large parallelogram, with two parallel walks running its entire length close to the sides. The centre of the garden is thus left in one large long quadrangle, broken at intervals of about 40 yards by four ranges of fruit houses. At the upper end, the residence of the late Sir Joseph Paxton, which has now become the gardener's house, is situated; at the lower end are the Pine and other pits. On the right-hand side, near Sir Joseph's house, is a greenhouse, the Amherstia and the Victoria house, certain span-roofed plant and early vine-forcing houses, and several other pits and plant houses, besides sundry old vineries and Pine pits. But the chief fruit houses are arranged, as I have said, at distances of about 40 yards apart across the centre of the kitchen garden. This arrangement is an excellent one. No roots can interfere with any others, as is too often the case where fruit houses are built too closely together; neither do the structures overshadow one another. The spaces between the houses form the main kitchen garden. By a very simple contrivance one of the most unsightly features of most gardens is got rid of at this place. The stokeholes and back walls of the first range of hothouses, which are within a few yards of Sir Joseph's house, are entirely hidden by an irregular bank of earth, crowned and faced with shrubs, and furnished near the grass with lines of flowers. As the space is narrow, rough stones are used to bank up the earth on the side next the stokeholes and to reserve a narrow path for the use of the stokers—a simple arrangement that might be copied with great advantage in many gardens. At Chatsworth there appear no back slums nor bare staring walls; in many good gardens these obtrude themselves too much. Instead of this we have here a picturesque villa garden, with banks of shrubs and flowers, entirely hiding from sight the back of the first range of glass. There are four of such ranges at Chatsworth almost 80 yards long, and varying in width from 10 to 21 feet. The first consists of six vineries and two Peach houses. The fruit of the latter were gathered at the time of my visit, but the strength and cleanness of the nut-brown wood told of fine fruit past and to come. The vines were also in the highest health, and were mostly Muscats, Alicantes, Mrs. Pince, Tokays, Frankenthals, and Hamburgs. The second range consists of a Plum house, with a trellis for Cherries against the front lights; a new orchard house, chiefly filled with a rich and varied collection of Figs in pots, and Vines and Cherries in front; two roof-trellised Peach houses, with the back walls furnished one with Apricots and the other with Peaches and Nectarines, the fruit plentiful and large, and just coming in. The third range consists of a long Melon-house, with a path in the middle, and Melons planted in pots to root through into a warm border on each side of the path. The pots tend to prevent grossness of growth and to ensure fertility; and the result, a heavy crop of fine fruit, justified the wisdom of their use. The variety grown was chiefly a hybrid between those two fine Melons, the Trent-ham Hybrid and Queen Emma. Beyond the Melon house is a large old Peach house 40 yards long, and with an enormous length of roof entirely filled by two Peach trees, fifty or more years old, laden with fruit, and exhibiting every symptom of robust health. The sorts are the Royal George and the Late Admirable, and the crop was a very heavy one, after I know not how many dozens had been thinned off. Those venerable old trees are worth a journey to see. A new Peach house, furnished with two Peach and one Nectarine tree, just coming into bearing, completes the third range. The fourth consists of vineries in six or eight divisions, the varieties grown being chiefly Muscat of Alexandria, West's St. Peter's, Madresfield Court, Alicante, Grosse Colman, Mrs. Pince, Lady Downes, and Ferdinand Lesseps. There are also three nice span-roofed houses of pot vines, most of which were cleared off and the Vines removed, their places being filled with choice Allamandas, Dipladenias, Caladiums, and other choice plants. Sufficient, however, remained in one house to reveal the excellence of the pot vines, and to establish the merit of Ferdinand

Lesseps as a good fruiter in pots, and a Grape of wonderful uniqueness of flavour. There are two other vineries to the right of all these which merit more than a passing notice. Both are old houses, and one is used as a succession Pinery as well. The crops in these, however, are marvellous examples of good cultivation. The larger of the two, the border of which has recently been widened, shows extraordinary examples of bunch and berry. Mr. Speed's receipt for large bunches is to keep the leaves green as long as possible the preceding season. He also makes his vine borders piecemeal thus:—first season 6 feet, second runs out to 12 feet, and so on till 20 feet or more are reached. The composition of the borders is simple and uniform: One bushel of crushed bones, one of charcoal, and one of lime rubbish being added to each load of loam. The results in first-rate Grapes, and plenty of them, are so well known as hardly to need mention here. Figs in pots are also well done, and quantities are seen in all directions, the most remarkable being in a span-roofed house of tiny plants (few of them 18 inches high) mostly laden with fine fruit. It is seldom one sees the Fig successfully fruited in such a small state. Among a number of varieties I noted the following as either novel or unusually prolific, chiefly the latter:—Black and white Ischia, white Marseilles, Lee's Perpetual, Grosse Verte, La Vineyard, and Royale Noire.

Chatsworth has long been famous for Pine growing. There are three pits about 30 yards long, 8 feet wide, and 7 feet high at the back for fruiting Pines, and two pits of about similar size, and a wide pit in one of the vineries for succession plants. The pits are heated with hot water, and about 18 inches of leaves are used as a plunging material. Most of the plants are fruited within the year in 12-inch pots, though Mr. Speed frequently plants them out to fruit, and says his heaviest fruit are cut from these planted out plants. There is one drawback to that mode that was forced on my attention at Chatsworth. It destroys the portability of the plant as the fruit approaches maturity, a point of great importance in prolonging the season or regulating the supply of Pines. One of the greatest merits of the planting out system is the succession of fruit that it ensures. The Pines at Chatsworth are remarkably clean and strong for their age. A number of useful, fine-flavoured, well-formed fruit is aimed at, rather than a few monster fruits. Queens, Charlotte Rothschild, and smooth-leaved Cayenne, are mostly grown, and as many as forty fruit a week, ranging from 4 lbs. to 7 lbs. each, are sometimes cut. A good many crownless fruit were seen, and in almost every instance the fruit seemed the larger and the pips the plumper, from that denudation. Easy access is obtained to the plants by a raised stone platform carried all along the backs of the pits, about 4 feet from the ground. Another most useful adjunct to Pine culture here is a large copper at one end of the pits, to provide hot water for watering and sprinkling purposes. The necessary shading was given by splashing the glass with whitening.

Close by the Pine pits is an old-fashioned lean-to house, with Cucumbers of all sorts growing in it, and also one of Pearson's Strawberry pits furnished with late Cucumber plants. The latter is about 27 yards long by 10 feet wide, and a yard high. The centre of the ridge is raised up and down with a simple ventilating arrangement. About 1,500 pots of Strawberries are grown in this house. The pots are plunged in the borders in leaves in January, and the plants begin to bear in March, and from the kindly nourishing bottom medium, and the abundance of light, they go on fruiting till June, when they are removed. I saw hundreds of them still showing fruit in July out of doors. Such early varieties as the Black Prince are often placed again under glass for an autumn supply. No house could excel this for the culture of Strawberries, and it seemed equally well adapted for a fine crop of Melons.

D. T. F.

From *Harper's Bazaar* we learn of a new danger to plant hunters. A man living in San José, California, while riding near the city one evening, saw two men whom he supposed to be highwaymen. He shot one of them dead, and made the other a prisoner. An investigation showed the victim to be an inoffensive French florist, who, with a companion in the same business, was going into the mountains near New Almaden in quest of plants.

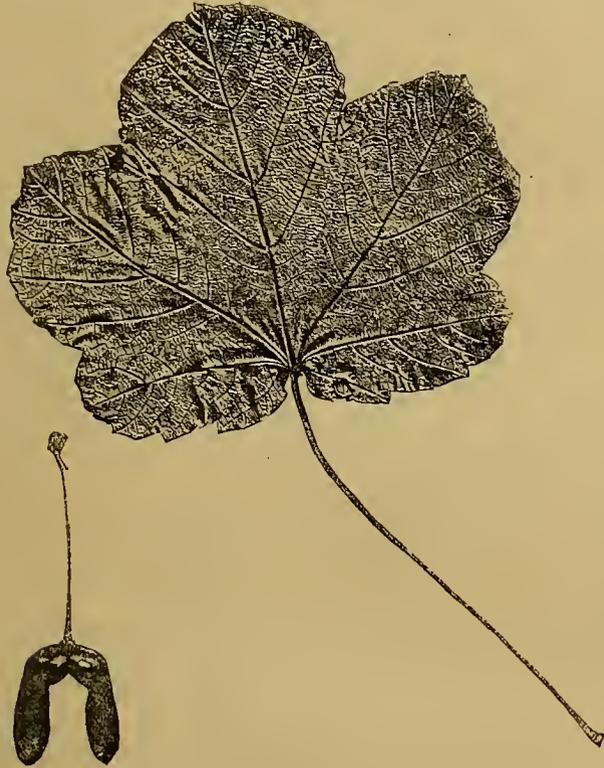
THE ARBORETUM.

HARDY TREES AND SHRUBS.

BY GEORGE GORDON, A.L.S.

THE BLUNT-LOBED-LEAVED HUNGARIAN MAPLE (*ACER OBTUSATUM*).

This forms a robust, rapid-growing, compact, round-headed deciduous tree, from 40 feet to 60 feet high, amply clothed with foliage. It is a native of Hungary and Croatia, on hills and mountains. It was first introduced in 1825. The leaves are rather large, roundish-cordate, five-lobed, smooth and deep-green above, downy and pale beneath, and on long foot-stalks. The lobes are bluntish, not very deeply divided, and visibly toothed on the edges. The decaying leaves become dark brown before they fall off. The branches are rather stiff, the naked young wood smooth and brown, and the buds prominent and green. The flowers are small, greenish-yellow, and produced at the ends of the short lateral shoots in few-



Fruit natural size.

Leaf, 6 inches broad and 9 inches long, including the footstalk, which is frequently $4\frac{1}{2}$ inches.

flowered drooping corymbs in the end of May. The fruits or keys are small, and quite smooth when fully matured, with the wings distant and but slightly diverging. The Hungarian Maple is very frequently misnamed *opulifolium*, which is a very different kind, and one that belongs to the *Acer campestre* or common field Maple section, whereas *obtusatum* belongs to the Sycamore tribe.

NOTES AND QUESTIONS ON TREES AND SHRUBS.

Ficus repens.—This species of *Ficus*, which we have recently shown to be quite hardy, has, we are informed by Mr. McDonald, of Phoenix Park, Dublin, fruited freely on the open wall at Woodstock, in 1869.

Acacia decurrens.—A large plant of this *Acacia*, which is one of the most graceful leaved of the whole genus, is now flowering freely in the temperate house at Kew. A bush of *Salvia bicolor*, a plant uncommon in ordinary collections, is likewise blooming freely in the same establishment.

Extraordinary Poplar Trees.—Will some one residing near Broadwaters, a place somewhere between Enville and Witley Court, oblige me with the history, if any, and some account of the age and size of twenty-four extraordinary specimens of the fastigate Poplar growing by the road-side, and one by itself near at hand far exceeding the others in size and stature.—D. T. F.

Spiraea decumbens.—This is one of the best of the dwarf species of shrubby *Spiræas*. A plant of it in Mr. Parker's Nursery, at Tooting, has been flowering for these past two months, and is yet in good bloom. It is only about 9 inches high; the flowers are white, and are produced in great abundance.

THE GARDEN IN THE HOUSE.

CULTURE OF PLANTS IN ROOMS.

(Continued from p. 230.)

INCREASING FROM ROOTSTOCKS.

A RHIZOME or rootstock is the underground or overground stem of perennial plants, which sends out annually shoots and flower-stems from its upper surface, and roots as it grows from the under surface. It is sometimes fleshy, sometimes woody, sometimes shortly-branched, and sometimes creeping. As plants with rhizomes are very easily and surely multiplied by their division, we shall notice particularly the different forms under which they occur. Some rootstocks are not branched, or only slightly so, and are thickly covered on the crown with shoots. Their roots are either thin, as in *Helleborus*, *Lobelia fulgens*, &c., or knob-like, as in the *Dahlias*, the herbaceous *Pæonies*, *Ranunculus asiaticus*, &c. Propagation by division should be performed at the season of rest. The rootstock should, with a strong knife, be divided into portions, each of which will be furnished with a stem, old or young, and some roots. The young stems are to be preferred, but where the plant has formed only one stem, this should be cut off about an inch from the rootstock, and split into as many pieces as can be removed with roots. This method is much used in the propagation of *Dahlias*. It is to be borne in mind that along with the roots a suitable portion of the stem is also to be removed, as it is from this part only in these plants that buds are developed. After division the portions are planted in pots, one in each. Creeping rootstocks differ from the preceding only in being much longer and having a greater ramification. They occur in evergreen tropical perennials, such as *Plectogyne* and the *Marantaceæ*, as well as in the greater number of our perennial shrubs. These rootstocks are easily divided into as many parts as possess shoots or buds.

Long shoots are sometimes sent out from the rootstock. These may either run underground or on the surface. The overground shoots form young rooting plants at their joints, which may be removed and planted separately. *Saxifraga sarmentosa*, *Fragaria*, and *Chlorophytum Sternbergianum* are examples of plants of this kind. The underground shoots send up numerous stems. These shoots may be cut into many small pieces, each of which, when planted, will form a new specimen. *Calystegia pubescens*, *C. sepium*, and *Tropæolum pentaphyllum* are examples of plants of this kind. The knob-like rootstock consists of a fleshy root-crown (as in *Anemone coronaria*, the variegated *Caladiums*, &c.), or it may be a creeping rhizome (as in the *Cannas*, *Hedychium*, and *Iris*). These are treated as bulbs, and, at the same time of rest, are cut into as many parts as possess stems. *Colocasia antiquorum* has a knob-like root. Every bud which is produced becomes a new knob-like rootstock, which, if broken off and planted, will become a new plant. Some rootstocks, like that of *Tropæolum tuberosum*, are formed by the expansion or thickening of the underground part of the stem. These are also to be cut, during the time of rest, into as many pieces as there are buds on the rootstock. They are then to be treated in all respects like bulbs. Some underground rootstocks are covered with fleshy scales thickly overlapping each other. Of this kind are the rootstocks of *Trevirania*, *Locheria*, *Tydæa*, *Nagelia*, and others of the *Gesneraceæ*. They are to be treated like bulbs, and when divided the portions are to be placed in pans filled with sand. They may be divided into as many pieces as there are scales, and when planted should be covered with a very thin layer of sand, and kept moderately moist by a very slight sprinkling until they have germinated. It is better for them to be rather dry than too moist. There are other rootstocks which form buds only on their upper surface or crown. Of this kind are the rootstocks of *Cyclamen*, *Tropæolum tricolor*, *T. azureum*, *Gloxinia*, &c. We mention these only to remark that although they may be propagated by division of the rootstock, it can be done properly only in a plant-house, and is not to be recommended in room-culture.

PROPAGATION BY MEANS OF ADVENTITIOUS BUDS.

Some plants, as *Bryophyllum calycinum*, produce adventitious buds on the margins of the leaves. Others, as *Cardamine*, produce them on the leaf-stalks. These buds

develop themselves into young plants. In room culture this mode of propagation is only of any consequence when employed with Bryophyllums and some Ferns. A leaf of Bryophyllum is laid flat (not edgewise) on the surface of the soil in a pot which stands on the window-sill, and covered with a light layer of soil. Water is given moderately, and without any further trouble young plants will soon make their appearance all round the edge of the leaf. When these have formed roots, they may be removed and planted separately. Among the Ferns to be recommended for glass cases, and which quickly form adventitious buds, are *Asplenium Belangeri*, *A. bulbiferum*, *A. flaccidum*, and *A. viviparum*, in each of which these buds are formed over the greater part of the fronds; while in such kinds as *Asplenium alatum*, *A. flabellifolium*, *Aspidium proliferum*, *Chrysodium flagelliferum*, *C. repandum*, and *Phegopteris effusa*, they are only formed on the points of the fronds. By pegging down those parts of the fronds which show a disposition to form such buds into a pot filled with heath soil they are sooner developed and sooner take root.

ROOT-CUTTINGS.

One of the peculiarities generally attributed to roots is, that they do not possess the property of forming buds. In most cases this is true, but there are many instances in which true roots, without any artificial help, send out numerous shoots. Familiar examples of this may be seen in *Roses*, *Poplars*, and *Elæagnus*. This observation has led to the experiment of propagating woody plants by means of so-called root-cuttings. For this purpose strong roots are cut into pieces about an inch long, and placed flat in a pan filled with sandy heath-soil, or with sand alone. The pan is then placed in the window near the light, and in order the more easily to maintain an equable temperature and moisture, it is covered with a bell-glass or a sheet of glass. Treated in this way pieces of the roots of *Roses*, *Dracænas*, *Cordylines*, *Yuccas*, and *Echites* (and even many plants which are not easily propagated in any other way, such as *Cordylina calocorna*, and the various species of *Clavija* and *Theophrasta*) form adventitious buds, which soon develop themselves into independent plants. When the pans are covered with a sheet of glass, this should be removed and replaced by a bell-glass when the buds begin to germinate.—*Dr. Regel.*

(To be continued.)

TABLE DECORATION IN DUBLIN.

I AM indebted to a correspondent for the following account of the "Ornamental Device for Table in Cut Flowers," (such being, I am informed, the phraseology of the schedule) with which Miss Hassard, of Norwood, took the first prize at the Dublin Exhibition on the 12th instant. The principal vase was a large March-stand, but the stem, instead of having the usual glass rod or tube, was much ornamented with spirals and beadings of glass, and in the upper dish there was a trumpet-shaped vase.

"In the top were sprays of pink *Begonia*, buds of blue *Agapanthus*, white *Jasmine*, wild *Clematis*, and *Oat-grass*, with a fine spray of pink *Cape Heath* in the centre, a few leaves of *Pampas Grass*, and long fronds of *Maidenhair Fern* drooping all round. The second tier was composed of *Clematis*, full-blown flowers of blue *Agapanthus*, little pink *Rose-buds*, white *Heath*, and *Maidenhair Fern*, with pink and white *Fuchsias* and *Moss* hanging round the edge. In the bottom dish was an outside circle of pink blossoms of a fine kind of *Gladiolas*, so placed that they were lying over the edge; with these were arranged white *Phlox*, blue *Lobelia* (*Paxtonii*), pink *Christine Pelargonium*, white *Jasmine*, pink and white *Heaths*, *Myrtle*, *Rose-buds*, and variegated *Cyperus*, the edge being fringed with light *Ferns*. Encircling this stand were eight trumpet-shaped specimen-glasses, four tall and four short, and in these were placed button-holes. Those in the tall glasses were in pairs, two being composed of little pink *Rose-buds*, pink *Heath*, white *Jasmine*, and *Maidenhair*, and the other two of blue *Campanula*, white *Heaths*, *Jasmine*, and *Maidenhair*. The four smaller glasses had button-holes made of *Myrtle*, *Jasmine*, *Campanula*, the little unopened buds of *Clematis*, and *Maidenhair*. I can assure you it looked very pretty."

Knowing, as so many of your readers do, the taste which this lady has displayed at many of the London flower shows, they will, I doubt not, concur with me in endorsing the verdict of my correspondent. At the same time there may be some who, as I do, cannot resist the temptation of trying, mentally, if not actually, to see if it be possible to make more of the same materials, or to use them with better effect.

Now I fancy it might have been prettier if the buds of *Agapanthus* had been in the second dish, and the blossoms of it in the bottom dish, and if *Campanula* (*Harebell*) had been used at the top. The graduation in shade of blue, and in size of blooms, would have been more pleasing to the eye as it ranged from the base to the top. Also, if by *Moss* is meant *Selaginella*, it might have looked lighter to have used this as the drooping foliage for the top, instead of the *Maidenhair*, which should then have been round the middle dish, under and receding from the *Fuchsias*.
W. T. P.

Dracænas in Rooms.—Early in last November I placed in my sitting-room a plant of *Dracæna terminalis*, rich in the brilliant colour of its leafage, and though the room sometimes had a fire lighted and frequently had not, and the escape of gas was such as to destroy *Cinerarias* and *Primulas* in a few days, the *Dracæna* remained fresh and beautiful until May. Most, if not all, the *Dracænas* would do the same, as would almost all coriaceous-leaved plants not natives of hot countries. The secret of this success with foliage plants is constant washing. Twice a week, if not more frequently, the plant had its leaves sponged on both sides with warm water, occasionally using a little common soap in the process, and to this we attribute its continued healthy appearance. Dust and a bad atmosphere are the great drawbacks to plant cultivation in rooms. Hence, plants that have woolly leaves which collect the dust and hold it, never do so well either indoors or in the open air, in towns, as those which have smooth ones, from which the dust is washed with every shower.—L. E.

EFFECT OF FROST ON SEEDS.

SOME seeds appear to require exposure to frost before they will germinate. Such, for example, are the seeds of the *Marvel of Peru* (*Mirabilis Jalapa*) and *Ipomœa purpurea*, on which M. Duclaux has made the following experiment:—Having gathered ripe seeds of both plants he divided each kind into three lots. One of these was placed in a chamber where a temperature of about 66° was constantly maintained. The other two were placed, one for one month, and the other for two months, in an ice-house, with a temperature of about 3° of frost. On the 10th of November seeds from each of these lots were sown, under the same conditions, in pots, which were then placed side by side in a warm room. Germination commenced on the 25th of January in some of the pots, and the following was the final result:—

Of <i>Marvel of Peru</i> (six seeds in each pot)—			
Seeds frozen for two months . . .	five	germinated.	
" " " " " " " " "	three	"	
" " " " " " " " "	none	"	
Of <i>Ipomœa purpurea</i> (twelve seeds in each pot)—			
Seeds frozen for two months . . .	none	germinated.	
" " " " " " " " "	two	"	
" " " " " " " " "	none	"	

The foregoing appears conclusive as to the necessity of a certain amount of exposure to frost to secure the germination of the seeds of these plants at least, although it will be seen that the degree which was most favourable to the *Marvel of Peru* was fatal to the *Ipomœa*. Indeed for the latter the exposure of one month, with its small results of the germination of only two seeds out of twelve, would appear to have been excessive. M. Duclaux was induced to select the seeds of those plants for his experiment in consequence of the resemblance which he had observed their development here to the hatching of the eggs of silkworms. These, he had previously shown, unless exposed to the winter frost, gave no subsequent indication of the evolution of the enclosed larva.

Lawn Roller.—The best is a large horse mowing machine. Get this on to the grass when it is wet, and it does more good than a dozen ordinary rollings. One machine is advertised as the only one that will cut wet grass. I never yet met with a lawn mower that would not, unless when the rain is too heavy for man and beast. Our machine goes all the year, and in all weathers, from February to December. Of course, in wet weather the horses wear boots. The wetter the grass, I will not say the better the machines cut, but they cut well enough, and undoubtedly the better they roll. They leave the surface of the lawn as even as a die. For years we never have used any other roller, unless perhaps in January. At all other seasons a cut once a week keeps the grass rolled to greater perfection than by any other system. The next best rollers are those made hollow and charged with water. The mobility of the weighing matter brings the whole pressure on the crushing part, and thus makes the roll more efficient. By turning a tap or filling up such rollers are also instantly lightened or weighted at pleasure. Moreover, by charging them with boiling water a short shift is dealt out to worms, snails, moss, and small weeds on walks or roads. These rollers are formed of two outer sheaths of iron with a water well between. They are charged and tapped at the ends, and are far from being so common as they ought to be.—D. T. FISII.

MAW'S TERRA-COTTA PLANT MARKERS.

THESE labels or plant markers are excellent, and well merit being adopted in every garden where neat and permanent labels are desired. They suit every inhabitant of a garden, from an Alpine plant to the largest tree. They are made of Parian and terra-cotta, and are imperishable. They may be used in the ordinary way by writing on them with a black-lead pencil, having previously rubbed in a little white-lead paint on the surface. The writing becomes perfectly indelible as soon as the paint has set.

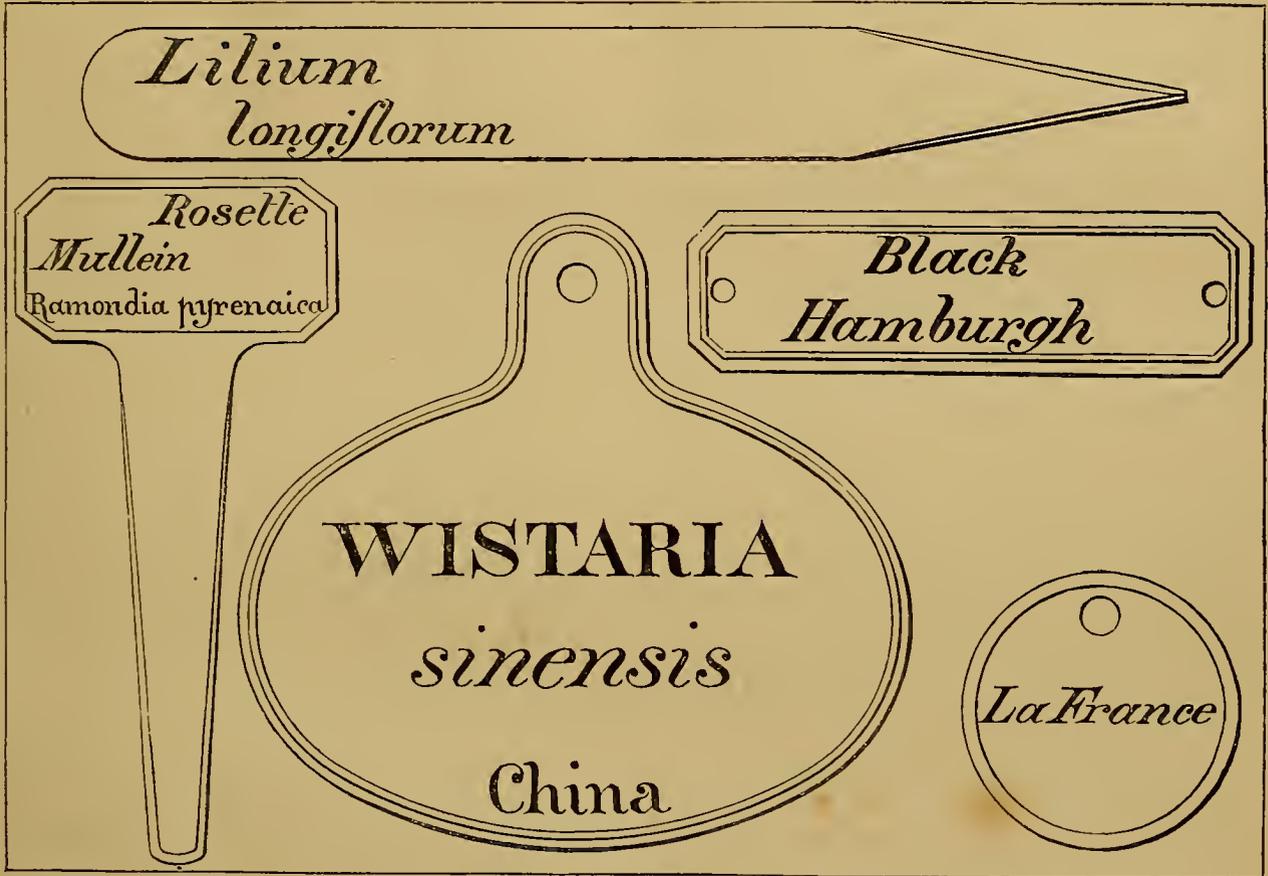
The labels are made in a variety of sizes and forms (some of which we represent in our illustration), suitable for trees, shrubs, and smaller pot and border plants, and in the neatness of their appearance far surpass the wooden labels in ordinary use. They are also very cheap in the first instance, in fact as

THE KITCHEN GARDEN.

THE BELVOIR SYSTEM OF POTATO GROWING.

BY WILLIAM INGRAM.

It is evident that the excessive rainfall in July, and the prevailing low temperature of the air at a critical period in the growth of the Potato, intensified the action of the disease which has proved so destructive to this important crop this year. The condition of the plant prior to the deluging rains of July was not that of perfect health. It had been checked by frost, and debilitated by ungenial weather, and was already predisposed to any unfavourable influences that might occur. It is a matter of very considerable importance to ascertain if any particular system of cultivating the Potato has proved efficacious in saving the crop from disease. As a Potato grower I



Examples of Maw's Terra Cotta Labels.

cheap as wooden labels, while they are far more durable, being entirely unaffected by rain or by any vicissitudes of weather. At Kew, Edinburgh, and Glasnevin, they are used in preference to any other kind of labels. We have had the above illustrations made specially for THE GARDEN. They show five kinds of labels, viz., the ordinary wooden-label form (*Lilium longiflorum*), the form suited for Alpine plants grown in pots (*Rosette Mullein*), a form suited for labelling vines which we saw in use at Mr. Titus Salt's, one for wall trees (*Wistaria*), and for affixing to Roses, shrubs, &c. (*La France*). There are also various other forms, which are illustrated in Mr. Maw's circulars.

It is said that for twenty years M. Thiers has received from an unknown hand a small bouquet of Violets, which is placed on the ledge of his window, or even on the chimney-piece of his bedroom. In spite of all efforts it has been found impossible to discover the author of this persevering tribute, and what is still more strange, when M. Thiers was arrested on the 2nd December, the bouquet of Violets arrived every morning at the prison. M. Thiers has given up the attempt to discover what friendly hand thus follows all his movements.

have made many experiments in planting, in the preparation of soils, in manures, and in the selection of sorts, and the result in the manner of planting is, that I have adopted, as especially applicable to the heavy soil I have to deal with, *the surface system of planting*. In the matter of soil I esteem a good tilth to be of the first importance; in manures I avoid the use of dung, employing as fertilizers lime, carbon, potash, and burnt earth, combined in one mixture, the latter preponderating, and in regard to sorts, I select those that exhibit the greatest vigour and vitality, and I change my seed every three years.

I suffered serious failures both in the quantity and quality of Potatoes by pursuing the old system of drawing deep drills, and placing the sets deep in the ground. I planted less and less deep, until I found that I gained the best result from merely placing the sets on the surface of well-dug ground, and earthing up fully at the time of planting. Observing that the outside row of Potatoes, and those plants at the end of each row which enjoyed more space, and light, and warmth, were invariably the best in quality, and the freest from disease, I acted on the lesson, and

instead of placing the sets 9 inches apart, and allowing 2 feet from row to row, I adopted the plan of giving each set a space apart of 18 inches, and of arranging the rows 3 feet apart; the result has been eminently satisfactory. I suffer less from disease, and secure Potatoes of superior quality, and, constituted as the Potato is, and requiring all the heat our climate affords for its proper development, and exemption as far as possible from the effects of heavy rain-falls, a system that secures these advantages must be of some value. Placed on the surface, the Potato has upwards of a spit of well-prepared soil below it; the soil being drawn for a space of 18 inches on each side of the row, raises a ridge of soil over the set, and in doing so a furrow is formed deeper than the common surface of the ground, so that the Potato is always dry, warm, and surrounded by all the good soil within reach of its roots. In winter digging we dress with burnt earth and charred wood, and when we plant we sprinkle a good dressing of charred matters along the row. In this locality an almost total loss has fallen upon Potato growers, and cottagers complain sadly and fear that sufficient seed will not be saved. Our crops of Ash-leaf, Myatt's Prolific, Conqueror, King of Earlies, were exceedingly good, and only afforded a small percentage of diseased tubers. Red Flourball and Red Regent are still green, and the crop is free from disease. Paterson's Regent is more diseased, but the return will not be unsatisfactory, so that I have much reason to be satisfied with my system, and to believe that in principle it is right and reasonable.

THE POTATO DISEASE.

The following article by Dr. Carpenter seems one of the most valuable of the many recently sent to the *Times* and other journals, and as regards the remedy agrees with Mr. Barnes's communication to THE GARDEN:—

Some writers throw doubt upon the fungoid origin of the disease, but all practical observers are convinced that it is really due to the fungus *Botrytis infestans*, or as some choose to call it, the *Peronospora infestans*, for the same fungus is known by both names. The fungus is allied to the *Botrytis Bassiana*, which produced the epidemic among silkworms a few years ago called Muscardine. Before we can possibly point out a satisfactory remedy for the disease it is requisite to know something of the natural history of its producers. If the natural history of the family is properly understood it will at once be seen how useless are many of the suggestions which various writers have made. First, there is really no difficulty in producing fungoid growths at any time and in any place, provided the requisite factors are present—viz., the proper degree of moisture, of heat, of food, and the atmospheric conditions required for the germination of the sporangia, which abound in our atmosphere. In the majority of instances the germs will be forthcoming, and will soon give ocular proof of their existence, though they themselves may be invisible. Whether it be the dry rot (*Merulius Lachrymans*)—which has just made its appearance among the new timbers of Croydon church, because the necessity for proper ventilation was ignored—or whether it be the *Torula cerevisiæ*, which provides for us our malt liquor, or the *Botrytis infestans*, which destroys our Potatoes, the effects will be produced if the whole of the requisites are in conjunction. The architect who neglects ventilation will introduce the *Merulius Lachrymans* without being required to plant the germ; the brewer will not get a properly fermented liquor unless his arrangements are right as to sugar and temperature—while the Potato grower will lose his crops every few years unless he takes means to keep the germs of the disease away from his seed.

The present custom of storing the seed is at the root of the matter, as far as a general epidemic is concerned. It is well known to fungologists that fungi have their times and seasons as well as other plant growths, and that certain spores exist, which are called "resting spores," from their custom of biding their time, and coming to maturity when the season for their development is present, remaining uninjured by changes of temperature and by considerable changes of their physical state, and which are not destroyed unless an actual chemical change is produced in them. These "resting spores" are produced in abundance in the places in which seed Potatoes are ordinarily stored; they bury themselves in the eye of the Potato, and are planted with it. These spores will not produce mycelium or spawn unless the proper juices are ready for their development, and not then unless the physical agencies are also at hand—such as a proper degree of moisture, heat, and the proper kind of exhalations from damp, unventilated ground, with some

disturbed magnetic state of the earth and air. These adjuncts are as necessary as the sugar in the sweet wort used for the production of beer, or the absence of ventilation for the production of dry rot. The tuber is planted with the "resting spore" in its eye; it sends up its haulm with the spore in its tissue. Just about the time of flowering the juices in the plant are matured sufficiently for the "resting spore" to develop; if then, there should be the conjunction of circumstances I have mentioned—viz., moisture, undrained ground, and electric disturbances, with luxuriant tops to the plants, the fungus is developed in the most marvellous manner, and millions of spores are wafted over the field, not resting, but immediately growing, sending their mycelium into the stomata, or breathing pores, upon the plant, and in a few hours poisoning the whole of the crops by interfering with the proper maturation of the juices. Every Potato receiving juice from a diseased haulm will suffer.

The growth of the fungus arises from its abstracting an important part of the juice of the plant, so that the character of the circulating fluid is quite altered; and a similar result happens as is the case when a human being is deprived of the oxygen required for active respiration, or if some other gas is respired. The blood is altered, and if the alteration is continued long enough death results. No doubt highly-manured lands and crops dressed with artificial manures beyond measure more easily succumb to the disease, just as is the case with highly fed, richly-seasoned human beings, whenever fever gets hold of them they rot most rapidly. So also if plants are infested with insects, such as the *Eupteryx picta*, they will more easily yield to the disease, because they contain less mineral matter in their tissues; but such are not causes for the disease. The cause is the fungus *Botrytis infestans*. The remedy is to destroy the germ before planting, and so to treat the seed that no fungoid growth shall be possible while stored away. Care should be taken to pick out the best specimens for seed—middle-sized, undeformed, and clear-skinned tubers—which is so often contrary to the general custom. These should then be treated with a dressing of some material which prohibits fungoid growths, such as chloralium, preparations of carbolic acid, or creosote, and then stored in a dry, well-ventilated chamber, where the temperature shall range between 35° and 45°. If they show signs of sprouting they should be immediately planted, for the removal of the early sprouts takes away much of the mineral matter out of the tuber. Common sense will dictate the measures which should be taken for the proper ventilation and drainage of the soil in which they are planted. If these rules are carried out I feel convinced that the disease will be reduced to a *minimum*, and a general epidemic be seldom possible; at the same time, seedlings and fresh soil appear to me to be as necessary as in every other kind of cropping. I write these suggestions in the belief that one law governs the action of disease, whether in plants or in human beings, and that it is easier to destroy the "resting germs" than to stay their effects. It may be urged against this view that the tubers used for seed could be destroyed by the germ in the eye, but it is one of the points in the natural history of the *Botrytis infestans* that it feeds upon the juices of the growing plant, and the matured Potato is not growing, therefore the concurrent circumstances requisite for its fertile development are not present. The "resting spore" continues such until all the circumstances are favourable for its growth. It is carried upwards in the haulm until its proper season arrives. This may not come; it may be too dry, or there may be no magnetic disturbances, or these changes may come too late—then no epidemic. I should mention that after the tuber has been infested by the *Botrytis*, its destruction is completed by another fungus, the *Fusisporium Solanii*, which changes its form as the work of destruction proceeds, hardening some portion of the tissue of the Potato, but changing the major part into a gelatinous, stinking mass, by means of which the starch is destroyed, while the gluten and the juices proper appear to be the food upon which the *Botrytis* flourishes.

Prolific Potato.—Mr. John Warburton, of Queenstown, has obtained forty-eight Potatoes weighing eleven pounds from a single Potato of the kind called "Connaught Rangers."

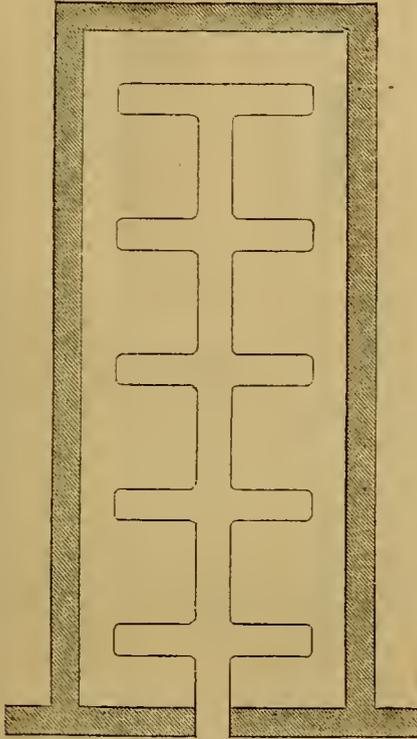
Cucumbers in Frames.—A market gardener near Hammersmith, whose Cucumbers are remarkable for fine health and productiveness, assures us that weak guano-water poured over the whole of the foliage through a rough rose, not only infuses vigour into the plant, but is also a preventive of red spider. He also finds toads so valuable in keeping woodlice in check, that he pays 2s. per dozen for them, not 25 cents each, as stated in some American papers that have lately reached us.—*F.*

Slugs.—Every one knows that quicklime dusted on the ground early in the morning is a good remedy for slugs, but to be effectual it ought to be repeated within an hour, because the slugs have the power of casting their skins, and after getting rid of the lime, will seek shelter. Of course, if the ground be covered, this will be difficult. Lime, however, cannot be used in flower gardens. In these, get some Cabbage leaves, warm them in an oven till hog's lard will spread over the surface; place them overnight near your favourite plants, and almost every slug will be found under them in the morning. It is hardly necessary to say that there must be no salt in the lard.

THE INDOOR GARDEN.

ARRANGEMENT OF WALKS IN PLANT HOUSES.

THE following new mode of disposing the walks in plant-houses, which has been proposed by M. Rivière, is deserving of notice. Perceiving that in wide houses, through which two parallel walks ran lengthways, a great deal of valuable side space was sacrificed by that arrangement, he conceived the plan shown in our engraving, and in many respects it appears to be an improvement upon the old one. A single walk runs through the centre of the house, from which transverse walks branch off on each side. The dimensions of the house here represented are $42\frac{1}{2}$ feet in length, $16\frac{1}{2}$ feet in width; space between the transverse paths, $6\frac{1}{2}$ feet; width of the paths, 32



inches. The hot-water pipes are laid down in the centre, and from them branch pipes are led into the side divisions. These branch-pipes are furnished with stop-cocks, so that a variety of temperatures may be maintained in the divisions suited to the requirements of the plants which they contain. The special advantages claimed by the new arrangement are, that it brings all the plants in the house nearer to the light; that it permits of plants of the same genus, or those which require the same treatment, being placed together and cultivated in the same division; that it affords greater facilities for examining and attending to the plants; and lastly, that it allows of a greater number of visitors walking through a house without crowding or inconvenience, as the transverse walks offer to parties meeting a ready means of getting out of each others' way.

LAGERSTROEMIA INDICA.

BY PETER WALLACE.

I AM not surprised at your Swiss correspondent (see p. 233) being struck with the beauty of this charming Chinese shrub, or rather small tree, which is not nearly so much grown in this country as it ought to be. With us, however, it requires the protection of glass, which it well deserves. Until I met with it in villa gardens in the Southern States of America, I had always been under the impression that it was a shy flowerer, but there it blossoms in the greatest possible profusion and flourishes in the open borders, as *Rhododendrons* do here; equalling them, too, in brilliancy of colour. It is used in the South in various ways; sometimes in the form of a hedge; at others in the shape of a screen; in short, it is employed extensively in all kinds of ornamental planting.

For fences between flower and kitchen gardens it is very suitable, and even planted out singly on lawns it is very ornamental, while during the months of July and August, when planted in masses, its delicately fringed and lovely coloured blossoms are strikingly effective. It bears abundance of seeds, which germinate readily, and quantities of seedling plants may be found in almost every garden in the Southern States. It is deciduous, and the soil which suits it best appears to be a strong black loam. As an autumn flowering plant for conservatory decoration in this country, or for cut flowers, this fine tropical shrub, when well understood, would be a valuable acquisition. Among American varieties there are several shades of colour, which vary from bright carmine to pale rose.

Lagerstroemia Reginae constitutes one of the few gay flowering trees to be found in forests in Ceylon. It grows from 30 to 40 feet in height, and is annually covered with hundreds of bright carmine-coloured flower-spikes, which are from 12 to 18 inches in length, and from 9 to 12 inches in diameter at the base. It is, indeed, truly a gorgeous tree, the wood of which is blood coloured, and very durable under water. It is, therefore, largely used in India for boat-building purposes.

The Scarborough Lily (*Vallota purpurea*).—We have never seen this plant so finely grown as we lately saw it in the Rev. Mr. Peach's garden, at Appleton-le-Street. The heads of flowers were more like great umbels of some gigantic Nerine than the heads we are accustomed to see. Mr. Peach's system of culture is very simple, and consists mainly in not drying off the plants, and in not mutilating them or dividing them at the root oftener than can be helped. Instead of turning the pots on their sides in winter, he simply places them under the benches, where they get the drip from the plants above, and instead of disrooting or dividing his specimen plants at potting time, they are shifted on a little, with no more disturbance of the roots than is necessary. So treated, the plant is a very valuable autumnal ornament. It should be generally known that it thrives perfectly in windows, and ought to be in every collection of window plants. In Battersea Park this season it was used with good effect in the open air, but as the bloom does not endure long it is not likely to become much used in the flower garden. The popular name results from a Dutch barque having been wrecked at Scarborough, from which the bulbs were washed ashore, and became cultivated in the town and neighbourhood.

The Small Trumpet Honeysuckle (*Lonicera sempervirens, minor*).—This climbing shrub, which but partially succeeds in many districts in the open air, is a capital subject for training up pillars or rafters in the greenhouse or conservatory. A plant of it in No. 4 house at Kew is now producing its whorls of showy tubular flowers, which are scarlet outside and yellow within, in such numbers as to render the plant a very conspicuous climber.

Vienna Exhibition Palace.—The situation of the Exhibition Palace is admirable, lying in the heart of a park unsurpassed for beauty by any in Europe. The area apportioned to the exhibition will embrace about from four to five English square miles. The covered space available for the exhibition will be about 1,150,000 square feet, being considerably more than that occupied by the Paris Exhibition of 1867. The building will be 980 yards long by 222 yards wide. It will contain one main gallery or nave, intersecting the whole edifice. This gallery has cross galleries or transepts on each side, which are so placed as not to obstruct the view from either end. Between the transepts and the nave lie the garden courts, which will also be available for exhibition purposes, and each country will have one or more of these transepts allotted to it, together with the portion of the nave and the garden court adjoining. A rotunda will rise from the centre of the building, and divide the main gallery in the middle. This rotunda, when finished, will be the largest canopy-shaped edifice without supports that has ever been erected. It has a diameter of 110 yards, and its height is 85 yards. The whole will be constructed of iron, after a design by Mr. Scott Russell. The main gallery will be 27 yards wide, and each of the transepts 16 yards wide and 81 yards long. The latter are separated by courts, which are designed for such objects as can be exposed in uncovered places. The number of square yards within the exhibition building will amount to 111,583. East of the Prater Rondo, facing the main gallery, the Art exhibition building will be erected, covering an area of 7578 yards. Buildings of a permanent character, sufficiently protected, will be provided for the exhibition of works of fine art. From the chief building covered galleries lead to a large conservatory and to smaller pavilions, which are intended for the exhibition of horticultural productions, aquaria, &c. A separate hall will be erected for machinery in motion, 964 yards in length, and 30 yards in width. The imperial villa, and the hall in which the jury will deliberate and make their awards, will also be erected in the grounds, which will be laid out under the direction of a landscape gardener of reputation.

THE PROPAGATOR.

THE ART OF GRAFTING.

(Continued from p. 242.)

TREATMENT AFTER CLEFT-GRAFTING.

We have already, under the different modes of cleft grafting, indicated the special treatment which they demand, and we have now only to generalise our principal directions. Keep a constant watch on the bandages. As they develop themselves the scions must be tied up to stakes, poles, or props of some kind. The simplest way is to attach a flexible rod by its two ends to the stock, arranging it in whatever manner the young shoots may be most conveniently fastened to it. Remove all buds from extraneous shoots of the stock; the stronger the stock, and more distant these shoots from the graft, the more rigorously should this rule be carried out. Any insects which have taken up their abode in the fissures of the graft or under the bandages should be looked after and



Mode of tying up and securing the Graft on a tall Standard.



Mode of tying up several Grafts on the same Stock.

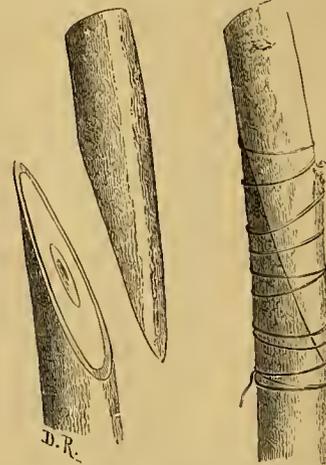
dislodged. A cleft-graft which has missed may be replaced by a crown-graft, a shield-bud, or a cleft-graft with an herbaceous branch.

ENGLISH GRAFTING.

GENERAL DIRECTIONS.—The stock and the scion are usually of the same diameter. They are cut with a slant in opposite directions, but at the same angle, so as to fit exactly when brought together. Their points of contact are sometimes increased in number by a series of notches or tongues which fit into each other. The stock is headed down to receive the graft. A rather large stock may have two grafts. The scion is a portion of a well grown branch with from two to four eyes. This method is applicable to most plants. In the establishment of Mr. André Leroy at Angers hardly any other system is employed, but in other establishments it is only used with shrubs of small diameter. The proper season for grafting in this way is in March and April: the operation would also succeed in August and September, when the flow of the sap begins to decline. There are numberless ways of practising grafting after the English fashion, but we shall confine ourselves to three or four of the most distinct.

SIMPLE ENGLISH GRAFTING.—Next to bud-grafting, this method is the most suitable for Apricot trees. The stock and the scion, which are of the same diameter, are cut with a sloping or splice cut perfectly smooth and even, in order to prevent the exudation of gum, which is always fatal to the union of these

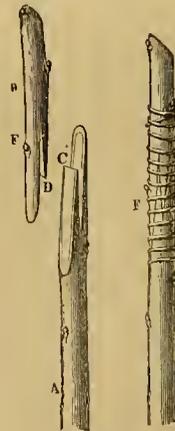
parts. The two parts are then fitted together as exactly as possible, and bound with a pliant bandage of wool, sparganium, or lime-bark. The use of a stake or prop should not be neg-



Ordinary Splice-Grafting.

lected, and care must be taken to ease the bandaging if it should become too tight.

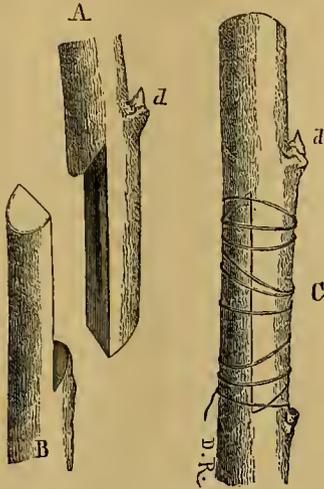
TONGUE-GRAFTING.—This is the method most commonly used, and is a sort of carpenter's graft. The scion (B) is cut with a very long sloping or splice cut; in this a long notch (D) is cut for about two-thirds of its length so as to have a bud (E) at the end of it. This notch is to be made quite smooth and should be made in two clean cuts of the pruning-knife. The stock (A) is treated in the same way, so as to have a notch corresponding to that of the scion, which should fit into it accurately. The point (D) is then inserted into the notch at C, and the parts are pressed into each other. As the ends of the graft are more likely to become loose than the centre, the bandages should be more carefully attended to at those points. The operation is completed by the application of mastic. Should the scion have a



Tongue-Grafting.

smaller diameter than the stock, it should be drawn to one side of the cut, so that the bark of both stock and scion may coincide on one side at least. In our engraving we give another form of English grafting, which we think should be called the *thunderbolt* method. Presenting great solidity of plan, it affords a double security in the two slanting notches of the scion (A) and of the stock (B) both finally united at C. The bud (at d) on the back of the scion has been properly left opposite the notch. Its object is to attract the flow of the sap to the graft. We shall here mention the old-fashioned English system of "whip-grafting," employed in England in the case of some kinds of trees in preference to budding, on account of the inclemency of the climate. The stock is headed down and

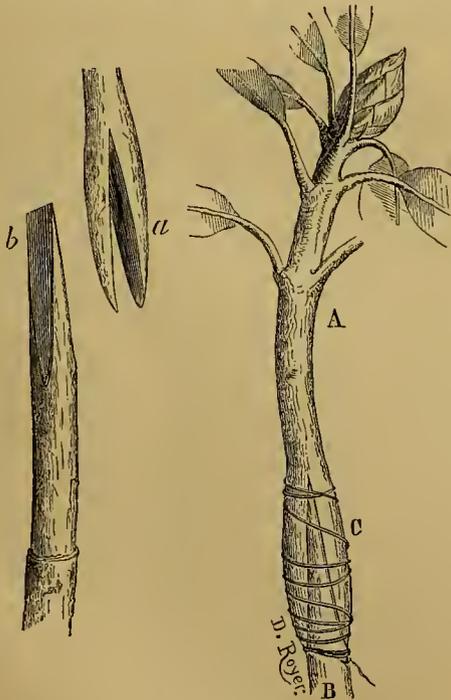
cut on one side only to receive the scion which is cut with a long splice-cut and partially cleft or notched; the graft is then



Grafting with a notched splice.

covered with grafting-wax as far as the terminal bud of the scion.

SADDLE-GRAFTING.—The stock (B) is cut at the top with a slanting cut on both sides (b). The scion (A) is opened or cleft at its base (a) and placed saddle-wise on the stock (B) which is embraced by it (as at c). It is then bandaged. This method comes more properly under the head of grafting under glass: in that case, mastic is unnecessary. In May 1867 we saw at the Exhibition at Versailles a charming collection of Rhododendrons obtained in this way by M. Bertin, junr. The scions,



Saddle-Grafting.

which were taken from flowering branches, had produced bouquets of bloom at once. It would therefore be very easy to get together in a small space a miniature collection of this plant in flower. We have also seen this process employed in the multiplication of Camellias by M. Marie at Moulins.

TREATMENT AFTER GRAFTING.—The more intimately the two parts are fitted to and hooked into each other the less necessity

there will be for the use of a prop or stake, yet, as it is better to err on the side of precaution, we should employ a stake or pole of a length proportioned to the probable development of the shoots. It is very possible that the bandage may become too tight, for as the parts are of the same diameter the stock will be young and consequently a vigorous subject. Should this occur, the bandage must be untied, and not cut, as there is danger of the knife penetrating the joining of the graft.—*C. Ballet.*

(To be continued.)

GARDENING ROUND LONDON.

(DURING THE PRESENT WEEK.)
BY OUR SPECIAL REPORTER.
PRIVATE GARDENS.

The Flower Garden.—Pinks, Pansies, and similar plants struck in outside borders under handlights, are being lifted and replanted in their blooming quarters. Plants of Wardie Lodge Variegated Kale are being lifted carefully, with good balls, and replanted in poor soil in an open situation, conditions under which the plants become stubbier and better coloured than they would be if kept in rich soil. Such as have been transplanted pretty widely apart about a month ago are loosened with a fork, so as to check growth to some extent, and cause them to throw out more fibrous roots. Sweet Williams, Wallflowers, and biennials are being transplanted wherever space can be spared for them. Sometimes they are put in the fruit bush borders about this time, and in early spring are lifted with good balls, and planted where they are to bloom, a practice which produces good stocky plants. The finer kinds of Foxglove are also treated in a similar manner. Daisies are being divided and planted in the reserve grounds, in lines eight inches apart; rooted cuttings of Violets and Pansies are also planted in similar lines, from which they can be readily taken for spring bedding. Hardy annuals for decoration next spring are being sown—some where they are to remain throughout the winter, and others in places from which they will be taken and transplanted into close nursery lines. They winter best in a light sandy soil, not very retentive of moisture. Narcissi, Anemones, Crocuses, and other bulbs are being planted in herbaceous borders; a peg is placed beside each clump, to indicate its position. Asters in flower beds, if likely to become top heavy, are neatly staked.

Conservatories.—*Sedum spectabile* is at present quite a gem in conservatories and similar structures; associated with foliage of Coleuses, Iresines, and other fine-leaved plants it has a pleasing appearance. Salvias, Cassias, some of the late-flowering Fuchsias, Celosias, ornamental Grasses, and several of the fine-flowered Begonias also now maintain a considerable amount of gaiety. *B. Weltoniensis* is one of the best for purposes of general decoration, its habit being good, and it produces a great profusion of bloom, though it does not throw it up very conspicuously from amongst the foliage. Some of the herbaceous kinds, such as *Boliviensis*, look well trained as dwarf standards, especially when the branches are allowed to droop. *Jasminum grandiflorum* is now everywhere in great beauty, and some Gesnerads, such as *Nægelia*, *Eucodias*, and *Tydeas*, are also flowering freely in warm corners. Some plants of *Campanula pyramidalis* are also now doing good service; others for later use are placed out of doors on beds of ashes. Sedums for late flowering are placed at the base of north walls, as are also *Brugmansias* required for later purposes. *Pelargoniums* for succeeding those at present in bloom are kept in cool houses, which are kept rather close; the plants are syringed overhead early every afternoon. Plants of *Solanum Capsicastrum* are plunged in beds in the open air, where their berries get nicely coloured. *Heliotropes*, *Salvias*, *Sericographis Ghiesbreghtiana*, and other plants of that kind are also plunged out of doors to be used in the decoration of conservatories hereafter. *Plumbago capensis*, one of our finest summer and autumn blooming plants, is now in some places truly magnificent. Young plants of it struck from cuttings in spring, and grown on steadily till now, removing all flower-spikes during the summer time, promise to keep up a display of blossom for the next two or three months. *Gomphrena globosa*, too, though apt sometimes to damp off suddenly, also comes in usefully at this season. *Chrysanthemums* still out of doors have a coating of cow manure placed on the surface of the pots, applied in the form of a basin, the water descending through which washes down nourishment to the roots.

Stoves.—Plants of *Poinsettia pulcherrima* required for early work are encouraged by a little bottom heat and a brisk atmospheric temperature, also by occasional applications of manure water; some for later work are being repotted into 4-inch pots, and receive more hardy treatment. *Euphorbia jacquiniæflora* is managed in a similar

manner. Some of the Gesneras, in the way of *G. zebrina*, *elongata*, &c., are now coming into bloom, and are supplied with weak stimulants, care being taken not to wet the leaves, as in that case they would become spotted, thus greatly marring their beauty. It is not, however, desirable to have all the Gesneras in bloom so early, and in order to avoid this they are started at different times. Some of the later ones just showing flower are being shifted, using a compost consisting of two parts good yellow loam, one part rotten manure, and a goodly portion of sand. Some use a little turfy peat in their soil. Several *Justicias* make valuable winter-blooming plants, and are now being shifted into a good rich compost. If kept in vigorous health, and free from insects, they soon grow into large specimens, especially if encouraged with a little bottom heat, weak manure water to root-bound plants, and occasional sprinklings from the syringe. *Pentas carnea* is another useful plant for winter decoration if treated in this manner, and young plants of it are always more satisfactory and more easily managed than old ones. Such *Gloxinias*, *Achimenes*, and *Caladiums* as have done blooming are placed in cool houses and kept quite dry. To those of the two former still in bloom, less water is given; indeed, it is a good practice to have them all at rest before November, unless there are plenty of roots to spare. Those raised from seeds or leaves this summer, however, are kept a little moist throughout the winter. Any withered leaves on *Caladiums* are removed, so as to retain the beauty of the plants as long as possible. Some keep them in a growing condition throughout the winter, but that is not desirable.

Indoor Fruit and Forcing Department.—In the case of Melons, a steady and brisk heat is maintained, with, at the same time, abundance of air, in order to produce the necessary high flavour. The fire-heat now applied renders it necessary to water the beds, even when the fruit is ripening, an operation which, however, requires care. The beds are also mulched, in order that they may the better retain the moisture given them. To Cucumbers a smart heat is likewise given, and they are well syringed every day, about two or three in the afternoon. In the case of Vines, all unnecessary wood and leaves are removed from such as are ripening their fruit, so as to promote good colour. Fig trees in pots that have just yielded their crop are being turned out of doors for a time, some being plunged in borders, and others set on beds of ashes. Cherry trees required for early forcing, if in small pots, are being shifted, and again re-plunged for a time in the open air. Where repotting, however, is unnecessary, they are surface-dressed with good, rich soil, mixed with cow-manure. Mushroom-beds are being still formed on shelves in sheds. For these some use only horse-droppings, others droppings mixed with a little loam. The beds are not wholly made up at once, but are made up of successive layers, so that the heat may not become too great at any one time.

Hardy Fruit and Kitchen Garden Department.—Fruit crops have mostly been harvested in fruit rooms, in which an equable temperature is maintained. The young shoots of Peach and other trees on walls are being nailed in. Old Gooseberry and other bushes that are either out of place or have become unfruitful are uprooted and burned. Raspberry canes that have fruited are being removed, and young ones tied up in their place. Hardy Hammersmith and green Paris Cos Lettuces are being sown in warm borders. Large plantations of Cabbages for spring use are now being made in lines about 2 feet apart, and young plants are also pricked off into warm borders about 6 inches apart each way, a thorough watering being given in both cases. A late plantation of Endive is being made on warm borders and on ridges; some are likewise being blanched as required for use. Corn Salad is being sown in drills about 6 inches apart; as a winter crop, this is very desirable. Potatoes are in all cases being lifted as soon as they are ripe, and dried a little before storing. All having the least sign of disease about them, together with the small ones, are separated from the others and given to the pigs. Seed Potatoes before being stored are dried in the sun, and exposed to the air until they assume a greenish tinge. Celery is earthed up on dry days, and manure water is given to it occasionally. Strawberry runners are being separated from the parent plants, and the space between the rows cleaned.

NURSERIES.

Indoor Department.—Young Heaths in flower in frames are set out on beds of ashes, and those previously placed outside are set further apart, so as to admit of the wood becoming well ripened before winter. *Begonias* coming up thickly from seed are being pricked off into seed pans; those previously pricked off, and now meeting one another, are being potted into small pots, and placed in warm moist houses. The raising of hybrid kinds between *Boliviensis*, *Sedeni*, *Veitchii*, *intermedia*, and similar sorts, is now receiving attention. Seedlings of *Campanula pyramidalis*, raised in pans in a cool pit, are now being pricked off an inch apart into other seed

pans, or the strongest are potted into thumb pots. They like a compost consisting of three parts good loam, one part leaf-mould, and a little good sharp sand. Plants of *Humea elegans*, sown about six weeks ago, are being potted and kept in a cool pit; but the weakest of them are left in the seed pan a little longer; for these soil somewhat richer than that used for the *Campanulas* is used. Heath cuttings, such as those of *Erica caffra nana*, *melanthera*, and *gracilis*, are being inserted in pots filled with silver sand, and placed under bell-glasses in rather close cool pits, well shaded for a time. *Acacias*, such as *grandis*, *Riceana*, &c., are similarly treated. Cuttings of *Hydrangea japonica* are now being taken off, the long leaves shortened a little, and the cuttings inserted singly in small 60-sized pots in a compost of loam, leaf-mould, and sand, in nearly equal proportions. The pots are placed under hand-lights in cool pits and well shaded. Of *Coprosma Baneriana* it is sometimes rather troublesome to get up a stock; cuttings of good firm young wood are being taken off now and placed pretty thickly in pots, filled to within half an inch of the surface with sandy peat, above which is placed a layer of clean sand; the pots are then placed in a cool pit under a hand-light, or in a double frame well shaded. *Bonvardias* are also being increased by means of cuttings in cool pits; some of those previously struck are being repotted, and those kept in warm pits, either for producing cuttings or flowers, are now removed, in order to make room for cuttings of Chinese *Primula*. The finer kinds of *Pentstemons* are being struck from cuttings in frames or pits; half a dozen being placed in each 60-sized pot. *Trachelium cæruleum* is being raised from seed sown in pans in cold frames. *Statices* are raised from seed under similar conditions; indeed, it is often found that *Statices* do much better raised under these circumstances than in warm pits. Cuttings of Tree Carnations are potted and placed in frames in front of a north wall. Plants of *Poinsettia pulcherrima* and of *Euphorbia jacquiniæflora* are now being repotted, the soil used being good sound loam, decayed manure, and sand; they are kept in an intermediate house. *Gesneras*, such as *zebrina*, *splendens*, *Exoniensis*, &c., are repotted in turfy peat, loam, and silver sand, and kept in a moist stove temperature.

MARKET GARDENS.

Vegetable Marrows now begin to show that the nights are getting too cold for them; they will be cleared off the ground as soon as time permits, in order to make room for Coleworts and other Cabbages, which only await damp weather to be planted out. The dry weather which we are at present experiencing seems to agree well with Tomato crops, which are heavy, and ripening excellently. Coleworts, which were pricked out in lines 6 inches apart and 4 inches asunder in the rows, about a fortnight ago, are now good plants, and will throughout the season be used for planting out as ground becomes vacant. The strongest are taken first, thus leaving the others room in which to properly develop themselves; those from the seed beds are, however, planted out before these, for not only is the pricking out of service in producing strong fibrous-rooted plants, but also in partially retarding growth, so that they keep longer in a good condition for transplanting than if left in the seed-bed. The Rosette with some is a great favourite, and when planted 15 inches apart each way, in an open situation, succeeds better than most other kinds of Coleworts. The best time to sow it is in May, but it may be sown in June, and during the first half of July, so that the young plants may be planted out before the middle of August, for if planted after that time they are liable to run to seed. The green Colewort is another excellent kind, not quite so susceptible of "running" as some others. Young Fulham Cabbages may either be pulled wholly as Coleworts early, and bunched, or every alternate row may be taken, and also every alternate plant in the row, leaving the others to remain for hearting. There is also the Blue Colewort, but it is very susceptible of running to seed, unless planted so that it may come into use in November. The Onion crop that has just been harvested is stored in dry and airy sheds and lofts, not closely floored, the boards being a quarter of an inch apart. This affords a free circulation of air amongst the Onions, thus obviating, to a great extent, rot and damp. Ground from which Onion crops have been taken is now deeply ploughed, and left in readiness for planting Cabbages and Lettuces on, as soon as rain comes. Onions for spring use are sown broadcast in beds, or in lines about 6 inches apart, in 5 feet wide beds. The Lisbon is the kind most used for this purpose. Onion seed is now being saved. After the heads have been cut they are placed on glass sashes; other sashes are then placed over them and tilted up a little, so as to maintain a free current of air. Here the seed soon ripens; the heads are then placed on canvas and slightly beaten until they part with their seeds. Lettuces sown about the middle of last month are now nice little plants, and will after a week or two be in good condition for planting out. The kinds mostly used are the brown Paris Cos, the green Paris Cos, and the hardy Hammersmith Cabbage Lettuce.

THE GARDEN.

"This is an art

Which does mend nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare.*

BEDDING OUT.

A DEFENCE AND A REPLY.

BEDDING OUT has found a new defender. He happily is not one of the many who merely denounce or grumble at those who have raised their voices against the evils of the system, but who are careful to assign no tangible reasons for the faith that is in them. The Rev. C. P. Peach, of Appleton-le-Street, Yorkshire, an accomplished gentleman and distinguished gardener, has spoken in a paper read at the Birmingham Horticultural Congress, and printed his ideas on the subject, so that we can apply the test of reason to them.

My object is to defend the system against its present detractors, as I think nothing in the history of gardening has tended so much to spread the love of flowers and to make gardening popular amongst so many people as this plan, which so rapidly sprung up into favour; so that we may safely say there are thousands of plants used now where previously they might be counted by hundreds and tens, and hundreds of gardens are gay now during the summer months where previously a few untidy borders of neglected perennials existed. This spread of the bedding-out system—of planting out, that is to say, plants in reference to their colour, habit of growth, form, and choosing plants that are most persistent in their bloom, instead of merely planting mixed borders indiscriminately—has done more to create and establish a love of plants than all the other systems which preceded it.

If it were true that "nothing in the history of gardening has tended so much to spread the love of flowers," would the presence of no matter how many "thousands" of plants in few varieties compensate us for the loss of the many precious plants thrown away to make room for this system? I think few clear-seeing gardeners would say it did. I have seen Lilies thrown on the rubbish-heap like rotten Potatoes, though this phase of the bedding fever is now rapidly passing away; many have similar memories of the last dozen years. It is well known that half a dozen years ago, and even at this day there are many large and so-called first-class establishments where half a dozen flowering plants, beyond the comparatively few varieties used in "bedding out," could not be found in the garden. And who was the destroyer? "Bedding out!" No person familiar with the history of English decorative gardening during the past twenty years can deny that "bedding out" is distinguished above all things in that it destroyed nearly all the most loved ornaments of our gardens—beautiful hardy flowers suited to our clime, which we are now gathering again wherever we may. But taking the rev. gentleman's statement in reference to mere numbers only, it is not correct. One might be led to think, from it, that the love of flowers was a discovery of the past twenty years. But if anyone turns to that fine old gardening book, Parkinson's "Paradise of Pleasaut Flowers," first published in the year 1629, he will learn the great love and knowledge of many hundred kinds of flowers that prevailed at that now distant time. But there is no need to seek in old gardening books for evidence as to the existence of much beauty in our gardens in ages long past away, for it is seen wherever the English tongue, or indeed any other tongue, is printed. Here is one of Shakespeare's glimpses at the rich garden flora figured and described in such a delightful way by his contemporary Parkinson—

"Daffodils
That come before the swallow dares, and take
The winds of March with beauty; Violets dim,
But sweeter than the lids of Juno's eyes
Or Cytherea's breath; pale Primroses,
That die unmarried, ere they can behold
Bright Phoebus in his strength: . . .
. bold Oxlips and
The Crown-imperial; Lilies of all kinds."

Of course, to some, all this will be mere sentiment, and the whole of this garden flora will seem very properly and beautifully described as adorning "a few untidy borders of neglected perennials." But let us look at results; compare what we see

now everywhere around us with what we remember of the older style of gardens; remember such evidence from books as that above alluded to, and, considering the vast increase in the number of those who have means to enjoy the pleasures of flower culture, I cannot admit that Mr. Peach's estimate is the true one.

Now, it is very easy to find fault with bedding-out; it is very easy to say it is vulgar, and that it is a mere massing of gorgeous colours—a heap of scarlet Geraniums here, and a lot of yellow Calceolarias there; it is very easy to say that it is causing persons to neglect the old perennials, Alpine plants, flowering shrubs, and so on. It is always, I think, more easy to find fault than it is to give judicious praise. Take an amateur, for instance, through a picture gallery, who thinks himself a good judge of painting, and how much oftener you will find him criticising the faults than stopping to admire the beauties. He will say, "Oh, there is too bright a green here, too glaring a red there, a want of half-tones in this, a deficiency in high lights in that," and so on perhaps through every picture in the Royal Academy; never stopping to point out the beauties, but criticising any defect, or perhaps damning a really fine picture with faint praise. And so I think it is much the case with bedding-out. It is much easier to point out defects than it is to praise what is good; it is easier to give a sweeping condemnation of the whole system than to show what is right and what is wrong, and to discriminate between what is worthy of imitation and what is to be avoided.

As Mr. Peach admits, further on, the faults that others have pointed out, it is not necessary to prove them faults once more. If, however, the paragraph means that others have denounced "bedding-out" without showing "what is right and what is wrong," demonstrating various ways of remedying its defects and adding other distinct beauties to the garden, it is unjust, as both in our gardens and garden literature many important improvements have been made and pointed out. The greatest service that can at present be given to ornamental gardening is to develop some beautiful phase of gardening not comprised in the "bedding" code, and thus reduce that to something like its right proportions.

Of the academy remarks there is nothing to say, except that it is perhaps curious that a picture gallery did not suggest to Mr. Peach a broader and truer comparison than the one above given, and that is, that a garden should more resemble a picture gallery, than what Mr. Peach farther on says, it should—a carpet. A true garden, however, will not exactly bear comparison with a picture gallery, because in it we have nature, and in the gallery representations of it. But the true gardener is an artist and not a weaver of carpets, and the day will come in due time when the laws that guide the landscape artist will guide the garden artist, and when it will be thought as barbarous to make a geometrical carpet of a garden as it would be to make one of "Summer's Golden Crown," by Mr. Vicat Cole, or of one of Turner's "Rivers of France." But let us discuss the subject in relation to our present wants.

Now, I am not going in this paper to enter upon a general and indiscriminate defence of the whole system, but I want to show that there is no wisdom in condemning it merely because in many instances it is done without either taste or refinement. I think every nobleman, gentleman, or amateur who cares about a garden should not only have his garden for spring and summer bedding plants, but also an herbaceous and perennial border (which should have a background of shrubs); a Rosery, an Alpine rockery, and a place for growing Ferns; but I would not mix them up together where it could be avoided, as they are much better kept separate and distinct. An herbaceous border can never be made to look in harmony with highly dressed ground, nor does it look well in front of the windows of a house; and for that reason I would not mix up the two together, but endeavour to keep the garden near to the house for spring and summer plants. I also wish to point out that to carry out the bedding system well, to make a garden not only gay and rich in colouring through all the summer months, but interesting and instructive, not only to those who grow or own the plants but to all who see it, is by no means an easy thing, and requires not only taste and judgment and a knowledge of the habits of plants, but also skill in the harmony of form and colour. Nor do I, again, think it is wise, when we know how much bedding-out has done to make gardening popular, when we see our public parks in London and other large towns appreciated by so many of the lower orders, and principally, I affirm, because they can now see in great perfection some of the most beautiful objects of God's world—flowers, which they never would have seen had it not been for the spread of the

system of planting out the beds afresh every year; because the old herbaceous and perennial plants, of which there is so much talk now, could never have lived year after year amid the smoke and dust of our great towns—when, I say, we find that this system gives so much pleasure, and that of the purest kind, to the working classes, I do not think it wise to raise this present outcry against bedding-out on the score of its being vulgar and gandy.

It is precisely because "every nobleman, gentleman, or amateur who cares about a garden" has not an herbaceous border, an Alpine garden, &c., that some have spoken the truth about the system which destroyed these, with other agreeable features of a garden, and that I for one protested against it. The statement that "*an herbaceous ground can never be made to look in harmony with dressed ground*," is wholly wrong. I wonder what the Rev. Mr. Ellacombe, of Bitton, the Rev. Harper Crewe, the Rev. Mr. Nelson, or any of the clergymen who extensively cultivate hardy flowers, would say to this? Do the mixed borders that run round the houses at Glasnevin—borders that have afforded such a rich feast of beauties to visitors at every season of the year—not harmonise with that fine garden? Did the long herbaceous border, far from perfect, that ran in front of Mr. Barron's house at Chiswick, not harmonise with the "dressed ground" near it? A properly arranged herbaceous border may be made to look in beautiful harmony with all its surroundings in the best kept parts of a country seat; that, however, does not mean that it would be well to place it alongside of purely formal arrangements of plants. Mr. Roger, the superintendent of Battersea Park, which is certainly the richest, and in every way the most attractive flower garden in existence, informed me a few weeks ago that the mixed borders, near the west entrance of the park, had been as much admired as anything in the park during the present season. I protest against the passage implying that the "lower orders" would never have seen any flowers in our parks; "flowers which they never would have seen but for the spread of the system of planting out beds afresh every year, &c."

I have pleasing remembrances of seeing delighted crowds looking at the flowering trees, &c., in Kensington Gardens very often; and in our London parks, too, there are many masses of Rhododendrons and other plants not planted afresh every year, and which are now beginning to be dotted here and there with Lilies and other plants, which it is *not* intended to replant every year, which have perhaps given not a little pleasure to all classes. And the reason why they could not see the "most beautiful objects of God's world" before this regenerating system came in? "Because," says Mr. Peach, "the old herbaceous and perennial plants, of which there is so much talk now, could never have lived year after year amid the smoke and dust of our great towns"! Proof that the opposite is the fact, and that no plants are more easily grown in the smoke and dust of great towns, is to be found in the Botanic Gardens in the Regent's Park, in the Botanic Garden at Chelsea, in the Wellington Road Nurseries, in the Hull and Liverpool Botanic Gardens, and in many other places which I could name if necessary. It will be observed that Mr. Peach's only alternative for the common plan is the mixed border. Now though a properly arranged mixed border is equal to any aspect of the bedding system, it is begging the question to consider the subject from this point of view. We must go on, not back.

Next week I shall enumerate phases of gardening, each in itself more important than the mixed herbaceous border, and which are now neglected in consequence of the exaggerated importance attached to the bedding system.

W. R.

Among the chief ornaments of our gardens at this season are the different species of Michaelmas Daisies (Asters). On inspecting a good collection recently, we found the following desirable kinds just coming into full bloom, viz., the pretty dwarf versicolor; Reevesii, apparently a dwarf, but still a desirable variety of ericoides; multiflorus, yielding a great profusion of small Daisy-like blooms; Drummondii and oblongifolius, the latter one of the best late-flowering kinds we know of, bearing as it does an abundance of showy small blue flowers. Conspicuous among those that have been flowering for the last few weeks, and that are yet very desirable plants, are such well-known kinds as the tall growing *Novi Angliæ*, and its variety *pulchellus*; and the large-flowered *A. Amellus*, which probably is the best of all medium-sized Asters.

NOTES OF THE WEEK.

— It is proposed that the corporation of Newcastle shall become possessors of the town moor to convert it into a public park, the large sum of £75,000 having to be paid to the "freemen" to abolish the privilege of herbage.

— The mountains in Carnarvonshire, including Snowdon, Glyder vawr, Glyder rach, Carnedd, Llewellyn, &c., were thickly covered with snow on the 21st and 22nd instant. This is said to be earlier than can be remembered by the "oldest inhabitant," and is a proof, if one were needed, of the inclemency of the season. Snow is reported to have fallen on the Yorkshire hills, and from almost every part of Scotland reports have been received to the effect that a storm occurred on Tuesday night and Wednesday. In many places trees have been uprooted and considerable damage done to crops.

— There is now a superb bloom of the Belladonna Lily in Osborn's Nursery at Fulham. This fine autumnal flower, which makes such a beautiful display in some places, deserves to be grown in every garden. The white variety is seldom seen, but is well worthy of cultivation.

— The Ipecacuanha plant, which is next to the Cinchona for its medicinal value in India, thrives apace in the Calcutta Botanical Gardens. From the only surviving offspring of twelve plants, sent out in 1866 from Kew, 400 cuttings have been propagated and have taken root.

— An example of the new *Tacsonia exoniensis* is at present in fine bloom in a pot at Mr. Veitch's Nursery, Exeter. This is a handsome and distinct variety, with flowers of a beautiful bright magenta colour inside, and a purple ring in the centre; the tube is from 2 inches to 3 inches in length. It is a hybrid between the beautiful *T. Van Volxemi* and *T. mollissima*, and promises to be an acquisition to greenhouse climbers.

— We have received from Messrs. Dick Radclyffe & Co. some admirable examples of skeletonised leaves, which in addition to the uses to which they are put in skeletonised bouquets, are we learn largely employed in the decoration of ladies' hair, for making up into memorial crosses, and for mixing with everlasting flowers in winter bouquets. These leaves consist principally of those of the Sycamore, Ash, Magnolia, and Ivy.

— At a sale of imported Orchids which took place the other day at Stevens', a plant of *Odontoglossum vexillarium* var. *giganteum* fetched fifteen pounds, and other lots of the same fine *Odontoglossum* fetched seven and eight guineas each; *Masdevallia Chimaera* realised five guineas, and *Cattleya aurea* three guineas; for *Epidendrum imperator* six guineas were given, and others fetched proportionately large prices. Altogether the sale of some 200 lots realised about £500.

— We hear a good account of the garden products of Paris this year. The markets abound in all sorts of superb vegetable productions and fruit. Never were the Peaches of Montreuil larger or finer. Grapes and Pears of extraordinary size are now plentiful, and are of excellent quality. On Monday the King of the Pumpkins was elected at the Halls. It comes from the neighbourhood of Amboise, in the valley of the Loire. It was christened "Rabagas," and sold for more than 80 francs.

— In the Coombe Wood Nurseries may now be seen some excellent specimens of Pampas Grass in bloom, one of which is bearing nearly one hundred noble plumes. In addition to these may also be seen a fine hardy Japanese Bamboo, one of the prettiest and most graceful of its class. This is not yet in commerce. In these nurseries may, moreover, be seen the beautiful *Frementia californica* in full flower in the open ground, where it stands the winter with a little temporary protection. As a wall plant it blooms considerably earlier than it does when grown in the form of a bush.

— On walking into Messrs. Backhouse's nurseries at York, the other day, we were not a little surprised to see out of doors two specimens of *Chamærops Fortunei* there which, though not the largest, are as healthy and vigorous as any we have seen in the south of England. They are planted in thoroughly and deeply drained ground on the southern side of the offices, which are built at the top of a gentle slope, and shelter the Palm well from the north. The growth this year is quite remarkable for its vigour, exceeding that of any previous year.

— We announced the other day (see p. 246) that Roundhay Park, Leeds, had been opened by H.R.H. Prince Arthur. Roundhay Park, which consists of 774 acres, possesses beauties of a very high order. There is an ivied castle, a hermitage, two waterfalls, and two lakes, besides dells and glades and shady retreats almost innumerable. But the Waterloo Lake—so called because it was made in 1815—is after all the greatest feature. It cost £15,000, is nearly three-quarters of a mile long, more than a mile and a half in circumference,

and presents an almost unbroken expanse of 33 acres. The park has been purchased by the people, and paid for by money raised on the security of the rates of the borough. A considerable portion of it has already been laid out by its former owner at considerable cost. It is intended to devote from 300 to 400 acres immediately surrounding this spot to the purposes of the park, the remainder of the land not required for park purposes to be sold for villa residences and gardens, thus adding to the beauty and usefulness of the park. The original cost of the whole estate is £130,000, and for this expenditure a park is provided not only for the present but for all future generations.

— At the late Horticultural Exhibition at Lyons, no fewer than thirty-five varieties of Radish were shown by M. Riveire.

— DR. LEITH ADAMS informs us that our British Oxeye Daisy has become such a weed in New Brunswick that it is exterminating the native plants and destroying the cultivated Grasses.

— Four bales of Palmetto leaves were recently shipped from Savannah to England, where they will be tested and their value determined as paper making material.

— THE *Ohio Farmer* announces that the Peach crop in Lake County of that State is enormous, and that the best fruit sells on the trees for about five shillings a bushel. The enormous quantities produced, indeed, have so cheapened the markets that cultivators have been almost ruined.

— AMONG the few hardy herbaceous plants that have come into bloom during the past week is the yellow-flowered *Ononis viscosa*, which is one of the best species of the genus. A plant of it may be seen in the herbaceous department of the Royal Gardens, Kew.

— ONE of the best of the few shrubs at present in bloom is *Cytisus capitatus*, plants of which are flowering freely in the gardens at Kew, and have been in that condition more or less throughout the summer.

— M. Pynaert, in the *Bulletin d'Arboriculture*, says that the perfume of the flower of *Lilium auratum* is obnoxious to flies, which are rendered inert by it, and which disappear from a room in somewhat less than half an hour after the introduction of a bloom of this noble Lily into it. Will some one try it?

— IN consequence of the inclemency of the weather many of the sub-tropical plants of the London Parks have been taken indoors during the past week. Among those taken in have been such plants as *Musa Ensete* and *Cavendishii*, *Strelitzia augusta*, various Palms, India-rubber plants, and *Cyperus alternifolius*. Some of the rarer *Solanums* and also a few *Polymnias* have likewise been taken up and potted for producing cuttings in spring.

— Now that the planting season is approaching we wish country gentlemen would consider how much may be done to make our roads more pleasant and beautiful by planting fruit trees along them, if not continuously, at least in groups. The trees would not only afford a grateful shade in summer, but might break the force of the north-easters in winter. In Germany the roads are in many places lined with fruit trees.

— THE culture of some of the smaller and handsomer aquatics in inverted bell-glasses is becoming quite an interesting phase of parlour gardening. Mr. Kennedy, of Covent Garden, has *Aponogeton distachyon* growing and flowering beautifully in this way; also the South American *Limncharis Humboldtii*, the bright yellow flowers of which are very effective; and the Water Soldier (*Stratiotes aloides*). We remarked, moreover, *Pontederia crassipes*, *Valisneria spiralis*, and many other interesting water plants, luxuriating under this treatment.

— ONE of the most singular consequences of the late war has been the addition of a number of new plants to the Flora of the environs of Paris. The numbers of species found since the siege, which were before unknown there, amounts to 190. Of these 58 belong to the Leguminosae, 34 to the Compositae, 32 to the Grasses, and 66 to other families. The seeds of these plants were for the most part conveyed in the forage of the French troops who were recalled from Algeria, Italy, and Sicily. Three kinds only appear to have been brought by the Germans, viz., *Vicia villosa*, *Stenactis annua*, and *Lepidium perforatum*. In other parts of France a similar result has been observed wherever there had been an encampment of troops. Should the Algerian and other plants thus introduced into so many parts of the country succeed in establishing themselves, it is obvious that in a few years the Flora of France will have to be rewritten.

PERE HYACINTHE abjures monastic vows;
The childless Father has become a spouse;
Blest with his Consort in their nuptial hour,
Beheld the Hyacinth a double flower.

—Punch.

CASTLE FREKE, COUNTY CORK.

BY NOEL HUMPHREYS.

THE noble woods and plantations of Castle Freke are very interesting, on account of their situation and the softness of the climate of that part of Ireland, which is so favourable to south of Europe and Chilian shrubs and trees. It is therefore much to be regretted that unavoidable family arrangements have placed this beautiful seat in the hands of trustees, with a special view to economy, so that the magnificent domain and its gardens are only just kept going, and afford, at present, no idea of what their beauty would be if in a high state of keeping.

On entering the grounds from the Rescaber side, the first objects that attract attention in the finely-planted woods are the Silver Firs. Forty or fifty years ago this fine Conifer was planted much more abundantly than at present, but from its liability to canker in many soils and situations, it has by degrees been less and less used. Here, however, it has, in many instances, thriven with great vigour, and I noticed some of the trunks nearly two feet in diameter, and a few very much larger. Some of the finest are, however, beginning to be covered with heavy lichen, though the trees are still comparatively young, which possibly arises from the shallowness of the rocky soil, in consequence of which, as in the Alps, the common Spruce often becomes covered with lichen at a comparatively early age, and its health destroyed; though its picturesque qualities are increased rather than diminished by the silver-grey coating of the parasite; and landscape painters would find their scale of colour woefully circumscribed in their treatment of Alpine scenery if all the trunks were freed from the grey and yellow tones of the lichens. One great Silver Fir, I noticed especially in the Freke woods, as forming a very grandly picturesque object, in consequence of the shaggy coating of grey lichen that hung from its great trunk and half-withered branches; it was quite a painter's model, and I lingered for an hour or two of absolute leisure to devote to a careful, and what artists call a conscientious, study of it.

The Cypressess of these fine woods are objects which at once command attention, and recall well-remembered scenes in Italy. Some of them are fine specimens, and in this semi-Italian climate they may attain to great dimensions. They are already big trees, though still comparatively young; therefore, as the Cypress is a slow-growing tree, the specimens now thriving so well in this Barony of West Carberry may eventually equal in size some of their celebrated congeners in Italy.

Among the Conifers more recently planted (introductions from the American continent), I noticed a vigorous specimen of *Abies Douglasii*, planted by Miss Freke a few years ago, which is doing full justice to its good quarters in what seems to be a congenial climate on this side of the Atlantic. But decidedly the most remarkable example from the vegetation of the far West is an *Araucaria imbricata*. It is the handsomest, though not the largest, specimen I have hitherto had the good fortune to see. It has none of that straggling, unsupported length of branch which is now and then seen, and which makes an *Araucaria* appear like a mere skeleton of a tree. This finely-grown specimen, on the contrary, has its main branches short and compact, while they are thickly furnished with minor ramifications, the whole being perfect, fresh, and green to the very bottom, while the main trunk itself has preserved its leafy scales all the way up, as perfect as if the whole height had been the growth of a single year.

The Rhododendrons here form a forest in themselves, and the tenderer sorts, such as the scarlet tree kind, and some of the Sikkims beat even these of the noble woods of Highclere Castle, in consequence of the superior mildness of the climate. They grow here so luxuriantly that Mr. Winter, the head gardener, gathered a single bunch of flowers from one of the finer and tenderer hybrids which measured over 14 inches across, and that is by no means, it is said, an uncommon dimension. The luxuriance with which they grow and enjoy themselves in this soil and climate is proved by their ripening their seeds so freely, almost every plant being surrounded by an army of seedlings. The old *R. ponticum* of course thrives with wild vigour—there is a single plant in these woods of it over 25 feet high in the highest part, which covers nearly a quarter of an acre of ground. All the Azaleas, too, grow very freely. *Kalmias* also seem to like their quarters much, and *latifolia* attains a great size, while, like the Rhododendrons, it becomes quickly surrounded by a huge family of stalwart seedlings. In one part of the woods there is a long drive planted on either side with Rhododendrons, which have grown so freely that they not only meet overhead, but require continual cropping to keep a clear headway beneath. A portion of the drive has, in fact, become a kind of Rhododendron tunnel, which requires continual clipping to prevent its growing up. In some of the wilder parts of the "Old Wood," as it is called, Ferns

form a great feature, some of the *Osmundas* growing to a great size, and producing a very picturesque effect. There is in this fine wood rock and moss and lichen of every hue, and many of our rarer wild flowers, that only bloom freely in a soft and genial atmosphere; in short, with their choice selection of finely grown trees, and their numberless walks and drives, they are scarcely to be equalled. From different points, enchanting peeps of the sea are often obtained between the massive trunks of forest trees, and over picturesquely tangled underwood of shrub and briar, while from wider openings most extensive views are sometimes opened, which extend far inland, and at other points directly over the Atlantic ocean, according to the abrupt inequalities of the ground, as it leans towards the sea or towards the inner landscape. These picturesque plantations are not very extensive, but they contain within their somewhat restricted circuit almost every variety of scenery. Here, all becomes entangled and wild as an Indian jungle, and there, it opens into green slopes, like American savannas, sparsely dotted with fine trees, and next, dipping into a deep rocky ravine, with a gurgling stream heating its way among its obstinate impediments, and making a succession of miniature cascades, foaming and dashing between their stony flanks, half concealed by feathering Ferns and tangled Briars and creepers. In short, the picturesque plantations of Castle Freke can scarcely be surpassed either for beauty or variety. One beautiful feature of these woods, which I have omitted to notice, is the wild growth of the *Hydrangea*, which grows with the greatest luxuriance to a height of 10 feet or 12 feet, its great heads of flowers being invariably blue. I did not see a single plant with flowers of the more usual pale pink tone.

Mr. Winter pointed out to me a well-grown specimen of the upright Thorn recently spoken of in *THE GARDEN*. It is "straight and tall as a Poplar tree," and produces a good effect in juxtaposition with trees of round-headed growth. It is as much a "steeple of the woods" as the Poplar itself, though not quite so tall. A weeping round-leaved *Crataegus* also pleased me much, as a direct contrast to its last-named congener. A *Cupressus macrocarpa*, planted about twenty years, is already a noble object, the trunk being nearly two feet in diameter; and there is an American forest Oak, which becomes almost evergreen in this climate, which is flourishing nobly; as do also the common evergreen Oaks, which are abundant, and impart quite an Italian character to these fine woods.

THE FLOWER AND KITCHEN GARDENS.

The noble gardens of Castle Freke, which are at some little distance from the residence, are surrounded by a fine stone wall about 20 feet high, which encloses an area of eight acres. In the kitchen gardens the extensive walls are now nearly destitute of fine fruit trees; the Peaches and Nectarines and finer kinds of Plums having died out, and not been replaced. The different departments of this large garden are separated by hedges of cropped Beech, which, as Mr. Winter informed me, were once considered to be matchless. They were over 20 feet high, and cropped perfectly square and flat, with a castellated cresting which, by the continual cropping of years, had become as perfect and regular as though it had been the work of an architect. These green walls were, in short, a topiarian triumph, spoken of in county histories and tourist's guides as things to travel miles to see and to admire. The staff allowed to Mr. Winter, as head gardener, does not permit of his keeping the topiarian features of these gardens in any kind of order, and the battlements, already 20 feet high, being unopposed, shot up as with a shout of "excelsior" into still more lofty proportions, utterly disregarding the forms into which their young idea had been taught to shoot. They would soon, in their unreasonable ambition to rise in the world and occupy a large portion of it, have transformed the whole garden into a dense Beech forest; and at last Mr. Winter found his only means of defence to consist in lopping them down to a manageable height of about 6 feet, at which elevation he is enabled, with a moderate amount of labour, to keep them in tolerable order and to give more air and light to the garden, the crops of which, not being required for the consumption of a resident family, are sent to market and sold. The crop of Onions, covering about a quarter of an acre, is splendid, the soil appearing to be highly favorable to their growth. Most of the other crops, with the exception of Asparagus, which requires more attention than can be given to it with the present staff, have been equally excellent this season. The leading paths of the kitchen garden are edged with flower borders, which show some fine old-fashioned plants growing in great perfection; and among them a fine plant of *Malva capensis* is growing vigorously and flowering profusely.

Out of the kitchen garden, through an opening in the cropped Beech hedge, the flower garden may be entered, there being also a separate entrance. But passing through the kitchen garden to a snug little floral compartment, the beds of which are crammed with flowers, and edged with a deep border of Box, it seemed like passing

from the refectorial ground to a little private pleasure, reserved for the lady of the castle, in the little bower of which she might con over her "Romaunt of the Rose" without fear of vulgar intrusion. There was once a great Spanish Chestnut in this pretty nook, which, in justice to the flowers, had to be laid low. It was a fancy of Miss Freke's, I was told, that it should be sawn off at such a distance from the ground as that the stump should be of convenient height for a seat; the plan being, that the young shoots, which were sure to come up all round, should be allowed to grow till they were of sufficient height to meet, at 4 feet or 5 feet above the stump seat, and so form a snug little bower "for one."

The next thing pointed out was a pretty unnamed seedling Rose, with the most minute foliage conceivable—smaller than that of the smallest variety of Scotch Rose—but the flower fully as large as the old blush Rose of old-fashioned gardens, its colour being a blush pink, stained in the centre with deep fiery-crimson. It is altogether an ornamental and distinct-looking plant. There is also a grand single white Rose growing against a wall in these gardens, of singularly distinct character, and it is believed to have been brought from the Continent or the East by late Lady Carberry. The foliage is solid and glossy, and appears to be evergreen, the flower being somewhat larger than that of the *Gum Cistus*, with fine, richly-formed and very opaque petals. Such are my impressions from memory, for it was not till I had left the gardens that it occurred to me how valuable this Rose might become in the hands of the hybridist.

Camellias do well in the open ground in these gardens, almost as grandly as at Caserta. I noticed a large white one at least 10 or 12 feet high, which was thickly covered with magnificent blooms last March. The *Escallonia*, too, thrives apace in this soil and climate; one specimen is 20 feet high, and covers a large space, though only planted a very few years ago. A great shrubby *Solanum*, called here the Potato tree, grows to a great size, and forms a very handsome object when in full bloom, as it is now—its bright blue reflexed flowers, with their deep orange centres, making a fine show of colour.

Several other plants well worthy of remark and not often seen, which were planted by the late Lady Carberry some ten or fifteen years ago, were also pointed out by Mr. Winter, who called particular attention to a collection of the finest hybrid *Rhododendrons*, even the tenderest kinds of which are growing in positively rank luxuriance here.

At either end of the greenhouses are great Myrtles, which here assume the proportions of trees; they are fully 25 feet high, completely overtopping the wall in front of which they are planted. Both broad and narrow-leaved varieties are now in full bloom, and as completely covered with a white snow of flowers as are our Hawthorn hedges in high May, and the perfume, quite distinct, is equally fresh and beautiful. The fruit ripens perfectly, and in the season is served at dessert, more, I should imagine, as a curiosity than on account of its excellence, as I fancy its flavour would be about equal to that of a Bilberry. The double variety is not yet open, but is covered with a shower of buds, which are of a light rosy-pink before they open.

The back wall of the central greenhouse, which has a very tolerable show of the usual things, in good order, is entirely clothed with a rich coating of *Fortune's Moss*, out of which spring great Ferns, and giant leaves of fine foliaged *Bogonias*, rich in their bronze and silver hues, which impart a grandly semi-tropical aspect to that part of the house. A device of this kind, carefully designed, and the forms and colours artistically considered, might be made to produce some very fascinating effects.

The portions of the flower garden devoted to the bedding system make a good show, by dint of Mr. Winter's great perseverance and determination, who considers that the flowers ought to be there, although there is no one to look at or enjoy them. I noticed two very prettily contrasting masses, the one composed entirely of the orange *Escholtzia* (*crocea*), the other entirely of the white variety. A good deal was done very effectively with varieties of *Petunia*, and, as a whole, it must be said that these gardens are made to produce a very creditable display, even under adverse circumstances.

NATURE.

"NATURE never did betray
The heart that loved her; 'tis her privilege
Through all the years of this our life to lead
From joy to joy: for she can con inform
The mind that is within us, so impress
With quietness and beauty, and so feed
With lofty thoughts, that neither evil tongues,
Rash judgments, nor the sneers of selfish men,
Nor greetings where no kindness is, nor all
The dreary intercourse of daily life,
Shall e'er prevail against us, or disturb
Our cheerful faith that all we behold
Is full of blessings."

—Wordsworth.

THE LIBRARY.

TREES AND SHRUBS FOR ENGLISH PLANTATIONS.*

WE are somewhat late in noticing this work, but *THE GARDEN* came into existence long after its appearance, and we take the book up now chiefly to expose a gross example of ignorant and impudent criticism of it. It has always been the fate of garden literature to fare badly in our literary and critical journals, but recently there are signs that so far from improving we are getting worse in this respect.

The *Athenæum* is the chief offender in this way: in addition to displaying profound ignorance of horticultural hooks, it has for some time past frequently resorted to a most unfair and vexatious species of "criticism." It frequently deliberately ignores the object of a hook, and then proceeds to condemn it, not only for what the author never proposed to do, but for not doing that which would make his work ridiculous. Thus, a writer on a purely gardening subject is re-proved for not introducing Vegetable Physiology into it, and advised to resort to Sprengel and others to enable him to do so the next time. The influence of ignorant critics is bad enough, but the most offensive variety is he who, to make the ordinary reader think he is capable of judging the book, assumes a knowing tone, and sneers at the work, the very object of which he either is, or pretends to be, ignorant. One of the most offensive instances was a sneering notice of Mr. Hole's capital hook about Roses, for writing which every lover of a garden ought to be grateful to him. But to our present subject.

Among various original drawings engraved for Mr. Mongredien's book, was one of the famous *Araucaria* at Dropmore. This picture, herewith given, forms the frontispiece of the book. In reviewing it, the sapient critic of the *Athenæum* asks, "Why is *Araucaria excelsa* passed off as *A. imbricata* on the frontispiece, correctly figured on p. 36?" The writer of this precious revelation of knowledge had evidently never seen an *Araucaria* in any but the young and open stage, like the other specimen from Mr. Murray's own garden, figured on p. 36, and accordingly, to account for the superb and almost frond-like sweep of the richly-laden branches downward, as shown in



The Great *Araucaria* in the Gardens at Dropmore.

the Dropmore specimen, he had to suppose it was *A. excelsa*. Now anybody who had seen the *Araucaria* in a large state at Dropmore, at Woodstock, or at Bictou, would have recognized the woodcut at a glance as representing a noble specimen of *Araucaria imbricata*—the grand form in which the branchlets do not ramify. And anybody who had ever seen a good specimen of the Norfolk Island Pine (*A. excelsa*), either in the conservatory or in the open air in a mild climate (it will not grow in the open air in ours), would laugh at the tree-knowledge of one who would suppose the picture to be that of the Norfolk Island Pine. Mr. Murray wrote in reply that

"the tree in question grows in the grounds at Dropmore. . . . The figure prefixed to Mr. Mongredien's book was drawn expressly for me by Mr. Whympier, who went to Dropmore for that purpose in the early part of this year." This, to our own knowledge, was the case, and we believe Mr. Murray himself, a great lover and cultivator of trees, and knowing Conifers well, went to Dropmore with Mr. Whympier. One would think that the critic would have held his peace at this true and simple statement. Not so. He must needs contradict point blank one of the most honourable men in London in the following words:—"We asked why the Norfolk Island Pine, *A. excelsa*, a conservatory plant with us, was made to do duty for the Chili Pine, *A. imbricata*, and we are told, in reply, that there is a fine specimen of the latter at Dropmore, which is quite true. It is equally true that the artist has drawn *A. excelsa* and not *A. imbricata*, unless, indeed, the same line of defence he adopted as in the case of the man who sold rooks for pheasants, and who, when taxed with it, replied, 'Call them what you like, crows if it pleases you; I call them pheasants.'" What asinine impertinence! Asserting his crow to be a pheasant, he has the hardihood to answer

Mr. Murray's note with the story which exactly fits himself. The knowing tone assumed deludes the majority of readers, from whom the cretinous ignorance of the critic is thereby concealed.

It is much to be deplored that honest work should be viewed by a large portion of the public through the evil eye of such creatures as this critic. The gardening public should be warned against accepting the verdict of such persons, and until we have a critical literature, with intelligent and responsible writers for each special branch, it is better to read and judge for one's self of the merits of a book on any subject that interests us than to be led by those

* "Trees and Shrubs for English Plantations." By Augustus Mongredien. London: John Murray.

whose own words prove them to be devoid of knowledge on the subjects on which they presume to give an opinion. No respectable person in private life would dare to do what this critic did with such effrontery in the above instance, and we are at a loss to know why the rules that bind honourable men in civil life should be violated by a writer in any journal appealing to enlightened readers.

As we reproduce the cut in question, our readers may judge for themselves what the critic had to go by. It is laughable to think that anybody could have mistaken it for a cut of *A. excelsa*, a plant which always produces its branches in distinct tiers, and never as fine as specimens of the Chili Pine do.

Mr. Mongredien's book may have faults, as most books have, but we do not think it fair that such foolish blundering on the part of the critic should be put down to careless blundering on the part of the author. The book is a worthy attempt to draw attention to the rich stores of our tree and shrub flora, now so much neglected. It contains much that is useful, as regards the arrangement and classification of trees, to the planters' and the landscape-gardeners' purpose; the descriptions are fairly accurate, though too concise, and it is illustrated by woodcuts in the best style of the art. Of these we give an example, showing a group of Silver Firs on next page.

THE CULTURE OF FRUIT TREES.*

This little book will not afford to its readers anything like a just or adequate idea of the value of the original of which it professes to be a translation. It is not a translation of the entire work of M. Du Breuil, but merely a curtailed reproduction in English of that part of his volume in which he treats of the grafting and training of the various kinds of fruit trees; his no less important chapters on soils, manures, planting, the insects which infest each kind of tree, and various other matters being wholly omitted. Grafting and training alone do not constitute the sum total of the "culture" of fruit trees, however indispensable they may be as branches of it, and however ignorant our English cultivators may be presumed to be on both these subjects. It is quite as necessary to have a clear knowledge of the best methods of planting the various kinds of fruit trees and of maintaining them in a healthy and vigorous condition when planted, and no work on the "Culture of Fruit Trees" can be considered complete, or true to its title, which ignores these matters. We are quite persuaded that many persons will find Mr. Wardle's "adaptation" a useful handbook on the two subjects of which it treats, but, in all justice to M. Du Breuil, we cannot, considering its omissions, avoid pronouncing it a very imperfect representation of his comprehensive and valuable work.

NATURE.†

THIS is a well-meaning but feeble little book, consisting of a dozen gossiping chapters on various subjects which the author has treated in a manner quite his own. For example, at page 20, under the heading of "The Smell," he informs us that "the nose of genius, in every age, has been conspicuous in every sphere of its numerous manifestations;" that to "smell a rat" implies perceptive faculties of a high order, and that Wellington, Napoleon, and many other great men, "all owed their exaltation to their noses, which were either projections worth surveying, or exquisitely moulded by nature!" With a good deal of such writing as this, the book contains here and there a sensible remark, which one is surprised to meet with in such company. We have not, however, space to quote more than the following extract, which we offer as a nut to the metaphysical analysts:—"If we add . . . terrible storms, followed by uneasy calms, bringing upon the scene some ship from Europe doomed to the horrors of the South Sea, grounding upon a rock at nightfall, and firing from time to time signals of distress, which are repeated by the echoes of the dismal deserts, with terrified Patagonians taking refuge in their caves—then we have an entire landscape of a region of desolation, covered with the shadows of death. The desolation, however, if analysed, will be found to result from the absence of the harmonic expressions in question, that is to say, the curves of mountains, &c., replaced by angular rocks perpendicular over the brink of frightful precipices—in a word, the surroundings of Cape Horn" (p. 114).

And further than this we think we need hardly go.

A GARDEN CITY.

THE Marquis de Beauvoir, in his "Voyage Around the World," thus sketches the Dutch colonial city of Batavia:—"In truth there are no streets, there are only majestic alleys shaded by beautiful tufted trees, framed in long, vast arbours, known to us in Europe only as

* "The Culture of Fruit Trees. From the French of Du Breuil. Adapted for English Cultivators by William Wardle, Nurseryman. With 187 engravings. Second edition, carefully revised, with an introduction by George Glenny." London: Lockwood & Co.

† "Nature." By Arthur Walker, Royal Body Guard (late Capt. 79th Highlanders). Longmans, Green, & Co.

operatic decorations. The rays of the pitiless sun can but penetrate their shade at intervals, while they gild with wonderful reflections the countless plumes of the Cocoa trees, the upright branches of the Flame trees, which are all scarlet flowers, the Bananas, with green leaves the size of a man, the cotton trees, laden with snow-white puffs, the Traveller's Palm, colossal fans of unsurpassable elegance, which yield streams of milk to the summons of a cane pushed into their bark; finally, the immense Banyans, whence fall thousands of vertical *lianes*, which touch the earth, take rapid root, and spring up to the summit of the tree, thence to bind themselves into intricate garlands, and again to fling themselves down. One of these trees alone forms an entire wood, surrounded with a curtain, a net-work of intertwining leaves and flowers. These alleys and arbours are the foot-paths of the 'arroyos' of the tropical Babylon, of those great aquatic ways which the Dutch would have made by hundreds in memory of the mother country, if the Malay population had not already made them by thousands. Thus have the instincts of the white race of the North and the yellow race of the Equator met. We go on (in little open carriages drawn by Liliupitan ponies) through a delicious succession of these embowered alleys, by the side of the 'arroyo,' covered with innumerable barques, which float amid gigantic Water Lilies, and catch glimpses of fairy-like gardens and white marble palaces, with glittering, many-coloured verandahs closing up the vistas. Seeing nothing but these alleys, I believe myself to be in a Valley of Delights in the neighbourhood of the city, when I am deposited at the hotel of the Netherlands, which is, it seems, in the centre of Batavia. This flowery forest is the city itself! The hotel is of white marble, supported on a colonnade of pierced arches; opposite is a great oval kiosk open to all the breezes, protected by a light roof. What a sight! What colouring! What a sky!"

Statistics and Vegetable Food.—A time may arrive in which the field of vital statistics, especially as regards domestic economy, may be greatly extended; for example, what are the effects of particular sorts of food upon longevity. In this country there are classes, especially in the poorer agricultural districts, in which there is scarcely any, and, in some cases, absolutely no consumption of animal food. Some hundreds of millions of the human race eat no animal food, and wholly abstain from intoxicating drinks. The consumption of wheat is confined to a narrow circle; that of maize is probably greater, and assuredly that of rice very far greater indeed. I recollect being asked by a Chinaman what quantity of rice grew in our country? And when I told him "None!" "O wretched land," he replied, "you must be under the curse of heaven." How far articles of food affect the corporeal powers of human beings it would be interesting to know. I have seen athletes among rice-feeders in India, China, and Japan whose feats of strength could scarcely be equalled by European rivals; but these exceptional examples have been taller and stouter than the average size of the population. I have seen an African seize a fierce wild bull by the horns and fling him on the ground, and keep him there in a state of absolute subjection. And in the destruction which has menaced the Potato crops it would be well if we better appreciated the value of maize and rice.—*Sir John Bowring.*

The Silicium of Plants.—Recent researches have demonstrated the great analogy, in respect to chemical character, which exists between carbon and silicium. Though the presence of silicic acid in the ash of plants has hitherto been regarded as a proof of the existence of this substance as such in the living plant, it can no longer be denied that a portion of that silica may be due to the combustion of organic compounds containing silicium. In the present state of vegetable physiology such a hypothesis cannot but meet with approval, for, on the one hand, no explanation has yet been offered of the function of silica in plants, while, on the other, it is known that certain plants can develop and thrive when deprived of silicium. If the chemist should show that silicium can replace carbon in plant-structure, much light will be thrown on this subject. A communication by A. Ladenburg on this point requires notice, not that he has found a solution, but because he shows the direction in which it must be sought for. He first endeavoured to ascertain if a small, but constantly occurring, percentage of silicium in cellulose could not be ascribed to a silicium-cellulose or a similar body. After impure cellulose had been treated with nitric acid and potash successively, it left an ash containing 40 per cent. of silica. Pure cellulose, in the form of Swedish filter paper, which had been dissolved in copper-ammonia solution and precipitated with hydrochloric acid, left from 0.11 to 0.16 per cent. of ash, one-third of which was silica; the remaining two-thirds, however, being bases, leaves the matter doubtful. He next operated on *Equisetum arvense*, a plant containing 20 per cent. of ash, one-fourth of which is silica. After treatment with strong acid and potash, the amount of ash fell to 16 per cent., of which one-tenth is silica. In testing for a carburetted silica, analogous to silico-propionic acid, in the alkaline extract, he obtained a body consisting chiefly of pure silicic acid, which on combustion gave 0.1 per cent. of carbonic acid.—*Academy.*

THE INDOOR GARDEN.

CULTURE OF ORCHIDS.

CLIMATAL OBSERVATIONS.

THERE should be at least three distinct climates for the well-being of the different classes of Orchids; and without these no one need hope to have success in their growth. Some say two climates are sufficient; but I demur to that, knowing well that if you have four or five, instead of three, your chances of success are much more certain. You can never, for instance, get the plants of the Cordilleras, of Peru and New Granada, to live at ease in company with those of mild regions, growing on the table-land of Mexico or Brazil. You may, by dint of pursuing the middle course of supplying heat on the one hand, moisture or ventilation on the other, keep both sets alive; but the being alive is not quite satisfactory to an ardent Orchid grower, and if all go upon the principle that what is worth doing is worth doing well, then no such half-way measure will receive much consideration. Again, you cannot take these same plants, living on the table-land of Mexico, or Brazil, or Jamaica, and plant them alongside of the inhabitants of the tropical swamps of Borneo, Java, Manilla, or any of the East India islands.

If you do, your success will be only partial. The summer temperature may be well enough; you may grow *Dendrobiums* in the same house as *Phalænopsis*, but if you persevere in doing so through the winter, a great number of *Dendrobiums*, that like rest and comparative dryness, will in time be ruined. We might go on instancing dozens of cases in the same direction, but what we have said will suffice to show that two temperatures, two systems of airing, and two systems of supplying moisture throughout the year, are not sufficient for the proper growth of even what are generally known as popular Orchids. Having established, therefore, that a three-climate division is absolutely necessary, let us state shortly what species are likely to live comfortably together under common treatment, and in general terms what that treatment ought to be.

ALPINE ORCHIDS, OR ORCHIDS LIVING IN A TEMPERATE CLIMATE.

The so-called "cool" Orchids have taken the public fancy to such an extent as nearly to drive out of cultivation the famous East Indian plants that took so important a position in our great metropolitan shows twenty years ago. Indeed, the mania is so prevalent that in and around London East Indian Orchids are rapidly dying out. Well, these cool Orchids grow admirably under the treatment that people used to grow, and grow to this day, *Pelargoniums*—that is, you may keep them as cool in summer as you can; but in winter they must have a little heat to keep them in good condition. When we say a little heat, we mean a temperature ranging between say 40° as a minimum at night, and 60° as a maximum during the day. Taking these figures as your guide, you may stand by them from November to March. Of course, the sun in February may raise the house even 10° higher than the highest of the figures named; but if it be merely sun heat it will do no harm. But there is something more needed than mere temperature; there is the proper degree of moisture to be considered. This at all times must be liberal—more liberal than for any other description of Orchid life. These Alpine Orchids must, in a measure, live in a bath of moisture, both at the root and in the atmosphere, else they will lack vigour, and decrease in size of pseudo bulbs, instead of increase. We need scarcely say that it is possible to overdo such plants with moisture; but the rule is, so far as we have observed collections, exactly in the opposite direction. The person in charge must be guided by the state of the weather in point of coldness or

wetness, in pouring out the water, both on the pots for direct physical benefit, and on the tables for atmospheric purposes. And as to ventilation, no opportunity ought to be lost in changing the interior artificial atmosphere. These opportunities do not so often occur as are desirable for the well-being of the plants. Many do not seem fully to understand when is the proper time. They often ventilate at the first blink of sunshine, and always, no matter when, at a time when the house is overheated. There is really nothing more damaging than overheating a house in the dull months of the year, unless it were opening the top ventilators when something of cold dryness prevails. To do so is to wipe up the finely-tempered moisture that is in process of being absorbed by the plant. When ventilation takes place in winter, by all means choose a damp day, when the outside atmosphere is not so greedy of moisture, and your plants will be greatly the better for it. Sunshine is not had to take advantage of, but it is not half so good as a dull, warmish day to such plants, particularly *Odontoglossums* and *Masdevallias*, that in their Alpine home seem to be perpetual growers, and to live in a moving, mild, moist atmosphere. The Orchids are impatient of anything approaching dryness. They show it by their flimsy elongated leaves and ill-built-up pseudo bulbs. If in winter they need copious supplies of atmospheric moisture and moisture for

root supply, in summer is it more than absolutely necessary. You require to give them all the ventilation possible during day, and a good deal of it during night. To recoup the loss occasioned by radiation, you must syringe overhead at least three times a week during sunshine, and moisten every part of the house that will give it up again for the assistance of plant growth. The following are a few Orchids that should inhabit this kind of climate:—*Odontoglossums* (with the exception of *citrosimum*) *Phalænopsis*, *Inseleyi*, *hastilabium*, *Kramerii*, *nævium*, *pulchellum*, *Uro-Skiunerii*, and some others; all the *Masdevallias*, without a single exception; *Oncidium macranthum*; *Pleione humilis*; and *Disas*.

ORCHIDS THAT ENJOY AN INTERMEDIATE TEMPERATURE.

An intermediate temperature is one where the thermometer should not fall below 50° at any time during winter, and where it may rise to 62° as a maximum day temperature, from November to March. Of course, a blaze of sun may send it up a few degrees higher, but that is the exception. Plants that enjoy such a climate in our country generally come from warm flats, where a mild moisture prevails, more particularly during the growing season. This is a temperature in winter quite suited to *Dendrobiums* of all kinds. It is not the most suitable summer climate for them, however; and where there are only three climates the whole of the family, with the exception of speciosum, must be moved to warmer and moister quarters. Comparative dryness is more suited to the Mexican division, and even the Brazilian division, than anything like a moist atmospheric medium. Then, again, certain species require specific treatment. Take *Lycastes*, for instance, and the *Odontoglossums* just named, which are not suited for the colder region, but which are quite at home here, and it will be found that they require a moister atmosphere than certain *Cattleyas*, *Lælias*, and *Epidendrums* that inhabit a climate of this kind. The best way to do with these things is to group them in divisions—one to be kept moister than the other, with the same treatment as their neighbours in other respects. By so doing a better system is provided for, and greater success certain. If, for instance, you keep *Lycastes*, or any *Odontoglossum*, such as *citrosimum*, or *Trichopilia suavis*, in a dryish medium, in winter, you will induce that fatal enemy, spot, to get in among your flock, and woe be to those who have let it in. The summer treatment of this division should be ventilation in good weather—more air to be given at the



The Silver Fir at Home.

sides of the house than at the top. It was erroneously promulgated at one time that ventilation should always be given at top and only very rarely at bottom, as it was supposed to let in the cold air and sweep out the hot air. And so it does; but if the top ventilators be kept shut the hot air can't get out; moreover, what is of high importance, the moisture is again condensed; and so we have moisture by precipitation without any extraordinary effort, such as is adopted at Fairfield, and which we have heard so much about as a novelty in practice, worth its weight in gold to the amateur and practical gardener! All these warm climate plants do with copious moistening at proper seasons. The particular species that live best in such a climate are, as we have already said, the *Odontoglossums* named in the cool section, the *Oncidiums*, with the exception of *Lanceanum*, *luridum*, *Cavendishii*, and probably *Papilio*, which enjoys a dryish warm temperature. *Acinetas*, *Angnloas*, which do even in a cooler atmosphere in summer than those *Odontoglossums* and *Oncidis*, *Barkerias*, *Burlingtonias*, *Bletias*, *Camarotias*, *Cattleyas*, with the exception of *superbium*, only all of them should be kept dry when the thermometer falls below 55°; *Chysis*, *Cologynes* (kept at the warm end of house), *Cymbidium*; *Cypripedium* *insigne*, *venustum*, *Schlimii*, *caudatum*; *Dendrobium*, *Dendrochilus*, *Epipendrum*, *Galeandra*, *Huntleya* (at warm end), *Lælias*, *Lycastes*, *Miltonias*, *Sobralias*, *Sophonites*, *Trichoplias*, and *Vanda cærulea*, *cristata*, and *teres*.

TROPICAL ORCHIDS.

All tropical Orchids, of course, like tropical treatment—abundance of heat, properly tempered with moisture. They don't seem to care so much about ventilation as the other plants spoken of, provided they are near the glass, and that they can drink up their share of moisture from the surrounding atmosphere. The failure of the cultivator of that class of plants results from his keeping them too stinted of atmospheric moisture; in having too much sphagnum about their roots, and in the watering of the sphagnum to such a degree as to kill the roots. People seem to think, because plants in their native habitats are subject to a temperature of nearly 100° in the shade, that that state of things should be aimed at in our hothouses at home. This is a mistake. We set down for all tropical Orchids a minimum ranging from 62° to 68° in winter, with a little rise during the day—not necessarily so large a variation as in the other climates—68°, indeed, is hot enough with a thermometer out of doors below 40°. That we would insist upon as proper advice for the four months already named. As a maximum temperature in summer, without ventilation, we would stand by 75° to 80°, toning down afterwards as the heat rises to as near that figure as may be. In no case is it good to exceed 90° with the sunbeams through the blinds, on an early shut-up house. The atmosphere must, as we say, be well tempered with moisture, or the heat will steal the life-blood of the leaves, even to desiccation, if many days practised. The following may be taken as kinds suitable for such a climate:—All the *Phalænopsis*, all the *Saccolabium*s, nearly all the *Vandas*, all the *Aerides*, the *Cleisostomas*, many of the *Stanhopeas*, the *Goodyeras*, *Anætochilus*, and certain less distinguished genera. Were, in fact, growers to assort their collections properly, there would be fewer mishaps when the returns came to be counted up.—*Villa Gardener*.

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

American Aloe.—A nice specimen of this is now in flower in the gardens of Misa Halifax, of Chaddacre Hall. The flower stem is 10 feet long; there are 26 bunches of bloom, averaging over 100 single flowers on each branchlet, making on the whole over three thousand blossoms. The flowers are of a green yellowish colour, and the whole plant has a right regal appearance.—D. T. F.

The Oleander.—We are glad to see this comparatively neglected, but truly handsome plant, beginning to receive the attention which it deserves. Really well grown plants of it are now beautifully in bloom at Lion House, and in the Royal Botanic Society's conservatory, Regent's Park. Pretty little bushes of it in flower are also plentiful in Covent Garden market.

The Jasmine-like Solanum.—This, though hardy in some of the warmer nooks of the Southern counties, makes a good and effective indoor climber, and wherever the climate is too cool for it, it should be used for that purpose. I saw it the other day blooming freely in the Royal Botanic Society's conservatory, in the Regent's Park.—S.

Cattleyas.—M. Linden treats his *Cattleyas* just arrived from abroad somewhat differently from the received method. Instead of placing them on damp moss, as is usually done as soon as they are unpacked, he pots them among broken crocks and pieces of charcoal, and keeps them in a moist and warm position. The plants push and root on the crocks, which are very hygro-metric and absorb all the stagnant moisture that might cause them to rot after their long journey. As soon as they are well established, he repots them in sphagnum in the ordinary way.

Double White Flowered Pelargonium.—The new double white-flowered zonal *Pelargonium*, raised by M. Smith, of Toulouse, is thus described in the *Revue Horticole*: Plant dwarf, very vigorous and free-flowering. Leaves deep green, with a brown zone. Trusses well raised above the leaves on stiff peduncles, and consisting of from thirty to thirty-five flowers in strong plants, and from twelve to fifteen in young ones. Flowers more than semi-double, with irregular petals fully cut, and of a snow-white colour, becoming faint rose just before they fall. Truss well-rounded and finely shaped.

THE FLOWER GARDEN.

HARDINESS OF LAPAGERIA ROSEA.

I AM interested in the reply you give in your "Answers to Correspondents" (see page 223) respecting the hardiness of *Lapageria rosea*. I think this plant is much hardier than is generally supposed. When I was at Colston Bassett Hall, Bingham, Notts, the residence of G. T. Davy, Esq., in 1871, I found that Mr. Lamb, the gardener, had planted out at different times, about the shrubberies and clumps of trees, a large number of plants of *Lapageria rosea* for decorative use as a hardy climber. The winter of 1870-71 was a very severe one, and many of the *Lapagerias* were cut down close to the ground, but in no case was there apparent the total death of a plant, and when I saw them at the end of May, 1871, the plants were pushing up a strong growth, and so encouraging had the experiment proved, that Mr. Davy was then intending to plant out 100 more plants during the summer. The spot selected for planting was either by the side of a tree having some lower branches, or in the midst of shrubs: in these respects imitating to some extent the surroundings of the plants in their native habitat, as it appears they climb up the trunk of a tree, or the stem of a shrub, then run outwards among the branches, and hang their pendulous, Lily-like, deep rose-coloured flowers on the outer branchlets. The past winter having been an exceptionally mild one, it is probable scarcely a leading shoot was cut down. Now the point is, that what has been done at Colston Bassett, can I think be imitated in many parts of the country. Colston Bassett occupies a somewhat elevated and exposed position in the midland districts, and the soil is apparently retentive of moisture, and therefore inhospitable during late seasons. It was fitting that Mr. G. T. Davy should take the lead in using the glorious *Lapageria rosea* as a hardy creeper in the open air, for it was that gentleman who introduced it to England in 1847. Dr. Poeppig, a distinguished German botanist, has given us his impressions of *Lapageria rosea* as he saw it in its habitat in South Chili. "The *Lapageria rosea*," he says, "sends out its fine entangled shoots from bush to bush, and while its dark green shining foliage undergoes no change from the varying seasons, adorns itself with its bright red Lily-like blossoms just at that time of the year when all the surrounding vegetation is at a stand, from the near approach of the rainy season. From this peculiarity and the splendour of its blossoms, the natives are in the habit of forming those beautiful garlands, with which, after the old fashion of their original country, they decorate the crosses in the streets and churches during the genial month of the Chilean May. From February to July, through all the storms of the winter, does it adorn the sleeping woods." When it was first introduced to England it was said respecting it that, flowering during the rainy seasons of Chili, when the sky is almost constantly overcast, though the temperature is mild, it would neither bear exposure to our summer sun nor our winter cold. But surely what has been attempted at Colston Bassett with so much success effectually disproves the first statement and advances something towards mitigating the effect of the second.

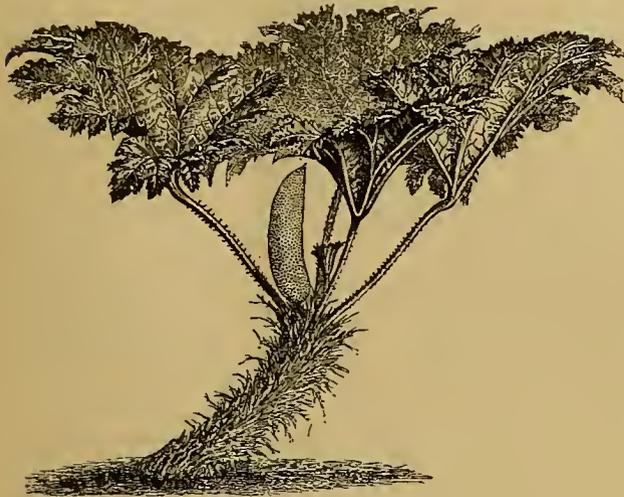
It may interest some of your readers to know what Mr. John Adair, of Merrion Square, Dublin, has stated respecting the bestowal of the generic name of this plant. "The name was given in honour of the Empress Josephine, whose maiden name was Marie Joseph Rose Tascher de la Pagerie, and who was known as Josephine Lapagerie, and who rendered such service to botany by cultivating exotic plants in the gardens of Malmaison, and by otherwise encouraging the subject."

I think there is ample reason to conclude that *Lapageria rosea* can be safely planted in the open air in many parts of the United Kingdom, and that it would thrive well if planted judiciously. If planted against trees, or in the midst of clumps of shrubbery, as is done at Colston Bassett, the most sheltered and warmest position should be selected. To have this splendid flower scrambling over bushes and shrubs in our English gardens, as it does in the woods of Chili in its native habitat, "producing there firm, broad, dark green leaves, and brilliant, rose-coloured, speckled, pendulous, campanulate flowers as large as a Tulip," is an achievement well worthy some care and trouble in attempting it, and some extra shelter should be given in severe weather. The situation should be one already possessing natural, or furnished with artificial, drainage; the compost in which it is to be planted should be made up of rough turfy peat and loam—the compost used in the pot culture of the *Lapageria*. At the growing season moisture is a prime requisite, as the *Lapageria*, with plenty of free drainage, appears capable of taking large applications of water at the roots. I hope your correspondent will be induced to plant the *Lapageria* in the open ground, and a few years hence detail such experience connected with its management as may assist others in achieving success.

R. D.

GUNNERA SCABRA.

HAVING formerly given a good figure showing the bold spreading habit and huge leaves of a good plant of *Gunnera scabra*, we now insert one showing its curious and huge cone of fruit. This is a great fleshy axis, deusely covered over with fleshy finger-like succulent cones, which are dotted with the very small fruit. The plant fruits freely in this country, and it is easily raised from seed, but the seedlings grow rather slowly. It is perfectly hardy, at least about London and southwards. There are good specimens at Kew, in the Regent's



Gunnera scabra.

Park Botanic Garden, and in the sub-tropical garden in Battersea Park. There is also a fine plant in the Exotic Nursery, Tooting.

MODELS OF FLOWER GARDENS AT GLASGOW.

I DIFFER *in toto* from your verdict in regard to these. Many of them were extremely well done, and evinced good taste. Models teach more and better than drawings; hence we find that architects, and landscape gardeners likewise, often make models of their works before they begin them in reality. I see no reason why gardeners should not do likewise. I know that these model gardens at Glasgow were popular; young gardeners crowded round them like bees as soon as they were admitted, and they were judged and re-judged by them over and over again. Many of these young men will have to alter or make just such gardens, and I cannot conceive how it can work evil, or bring ridicule on the art of gardening to show them on a small scale how to form and fill them. In almost all places there is room for a geometrical flower garden furnished on the bedding system. Remove this and you rob the garden of one of its chief attractions. Therefore the more models the better. In the multitude of counsellors there is wisdom, and so in the multitude of models, lines of grace and forms of beauty are likely to be found. Such were by no means wanting in those shown at Glasgow. As well run down model men and model books as model flower gardens. Even if a model is bad in form or furnishing, it teaches us what to avoid. So either way I back them as good things, both useful and instructive. D. T. FISH.

[If models of beautiful gardens be shown, nobody would be more pleased to admire them than ourselves. This, however, was not the case at Glasgow, and our opinion was also that of some of the best flower-gardeners in Scotland. If a model of the new valley at Cliveden, illustrated in a recent number of THE GARDEN, or of the water at Berryhill, and its beautifully planted margin, or a few similar scenes could be shown, they would do a vast amount of good in the cause of the true art of garden-design. But to do this would require more than a combination of the ingenuity of a hedge-carpenter and the taste of a cheap confectioner. The comparison of these model gardens—puerilities of wood, and paste, and paint, and dead flowers—more painful as they are to many persons than the most hideous daubs on the buffalo robe of a Prairie Indian, to "model men and model books," is too ridiculous to deserve refutation.]

Carpet Bedding at Battersea.—The *Globe*, in a highly eulogistic article on the gardening in Battersea Park, has a few sensible remarks on the mosaic or carpet bedding there. "There are some, however, who will contend that carpet patterns should be conformed to nature, and that any attempt to conform nature to carpet patterns is a palpable and ludicrous monstrosity, indicative of a taste about on a par with that which clips out box hedges into tea-kettles and cocked hats. Assuming that this style of gardening is good, however, the beds here are really very fine. Several by the path leading from the rock-garden to the south gate are elaborate and brilliant. It must surely strike most visitors, however, that they are lamentably out of harmony with their neighbourhood. Coming towards them from the south gate one passes through delicious glades, shady and secluded, and full of ferns grouped in a manner exquisitely artless and natural. Then comes a bit of open lawn, hedged in by Cannas and Bananas, and adorned by a beautiful specimen of the *Cycas revoluta*. One might stand there and fancy himself in some primeval forest, if it were not that close by this charming display of nature is this most elaborate and obtrusive display of art in the shape of carpet bedding."

The Variegated Ice-Plant.—This name, if liable to some objection, is not quite so formidable as *Mesembryanthemum cordifolium variegatum*! I see Mr. Hole relegates the plant to the rockwork. Permit me to say that while I should not object to seeing a tuft of it thereon, I should be very sorry to give up its culture as a bedding plant. In many parts of England I have this year seen it a most attractive object as a bedding plant, and in my opinion it is destined to prove one of the most popular bedding plants ever grown. Its modest, but sweetly coloured flowers, lend it a charm distinct from the variegation, which gives it its value when used as an edging or panel plant.—W. T.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Daisy Snowball.—This new and pure white variety of double Daisy is a very beautiful one, and likely to prove a gem for our spring gardens. We can safely recommend it to all lovers of early flowers.

Ceanothus Gloire de Versailles.—This is a very vigorous-growing hardy plant, bearing enormous branching panicles of handsome blue flowers, shaded with violet-rose. It is one of the finest of the American section, and continues in bloom until the first frosts.—J. M.

Dahlia coccinea.—Allow me to inform the Rev. Harper Crewe (see p. 163) that I have recently noticed several plants of this Dahlia in the Royal Gardens at Kew. Perhaps, therefore, he may be able to make good his loss from that source.—T.

White-flowered Goat's Rue (*Galega officinalis alba*).—Messrs. Slater, of Malton, grow this favourite old herbaceous plant largely, for the purpose of cutting in early summer. Both the forms are valuable in this way. I saw in France, and brought to this country, a variety which in consequence of not seeding, or seeding but sparsely, flowers much longer than the common type, which seeds so abundantly.—W. R.

Mesembryanthemum tricolor.—I often wonder why this brilliant annual is not oftener seen, as there is no edging plant equal to it in beauty on bright days, and, to me, its refusal to show its beauty under a cloudy sky is rather attractive than otherwise. It is peculiarly suited to associate with the dwarf and usually flowerless succulents now becoming so common, or for the marginal tufts or edgings of small isolated beds.—D.

Van Houtte's Harebell.—This garden variety or hybrid, which I suppose to be nearly akin to the noble Harebell (*Campanula nobilis*), is now very fine with me. The long pendent flowers are very handsome, and I recommend the plant for every collection of choice perennials. Growing as it does about a foot high, it answers capitally for the front of mixed borders just behind the dwarf Harebells, Saxifrages, etc.—R. F.

Selaginella denticulata and Solanum capsicastrum.—These both stood last winter out of doors at Monkstown, county Dublin, without any protection, near a wall, facing east-south-east and both are now growing vigorously. The *Selaginella* has been removed to a shady border. The winter was not a severe one, the minimum temperature above the grass being 22°. Except at Powerscourt, I never heard of *Selaginella denticulata* being hardy. I believe it has been used there as an edging plant.—G. P.

Ajuga reptans purpurea.—This may be called a trailing Perilla, as it is nearly of the same colour, especially when grown in poor soils. It does not grow quite so fast as the last, being generally about three inches high, and very useful where low masses of purple are required. It is a charming thing to work up with anything white or silvery; or planted out as a carpet, and dotted over with *Centaurea candidissima*, the effect is fine. The poorer the soil the deeper this plant is in colour.—T. WILLIAMS.

Calceolaria amplexicaulis.—This fine and distinct kind should be more grown in our flower gardens than it is, particularly as it seems free from the disease which is so fatal to the common bedding varieties. Besides, I think it finer than any of them, and owing to its tall habit, it groups well with the numerous bold habited plants that are now invading our flower gardens. It is abundantly grown in the gardens in the Phoenix Park, at Dublin, and no doubt some of the gardeners there can testify to its great merit.—W.

Salvia pratensis rubra.—Some years since M. Chas. Briot, in one of his botanizing excursions, discovered a plant of the wild Sage, which bore handsome red flowers. This is planted in the garden at Trionon, where it is still admired by all who see it. M. Briot, sen., in a letter to the *Revue Horticole*, speaks in high terms of the fine effect of this plant either in borders on the margins of shrubberies, and in groups, or isolated on the turf. The flowers of *Salvia pratensis* are usually of a blue colour, pale or deep, although occasionally white, lilac, and even rose-coloured flowers are met with, but a plant with pure red flowers is very rare indeed.

THE FRUIT GARDEN.

THE VINE IN THE OPEN AIR.

(Continued from p. 587, Vol. I.)

It is important to note, as respects the establishment of the fact of the perfect hardiness of the grape vine in the climate of England, that the walls of those days weren't heated. The majority of the vines were, in fact, grown without the aid of walls, the favourite method being from stools, like raspberry canes or ground cordons, about six inches from the earth, and sometimes on trees or poles. It was not till 1718 that we hear of the Duke of Rutland, at Belvoir, keeping artificial fires constantly burning behind two sloped walls from Lady-day to Michaelmas, whereby he was rewarded with the largest grapes, and even the best Frontignans, in July. My object in stating these facts is two-fold: they are interesting as scraps of horticultural history, and they prove beyond all controversy that the English climate will grow grapes without artificial heat. Barnaby Googe says, "wine-growing declined partly by means of civil discord long continuing or slothfulness, it was left, and so by long time lost, as appeareth by the number of places in this realm that keep still the name,"—and this was written in 1586. Upon many cliffs and hills are still to be seen the roots and remains of old vines.

In Richard II.'s time we have an account of the wine produced in the little park at Windsor, part of which was consumed in the Royal household, and part sold, and the tithe thereof paid to the Abbot of Waltham, then Rector of Old and New Windsor. Woodstock, a name again rendered famous by the excellent wines now made there from out-of-door grapes by Mr. Fenn, was also a wine centre in the olden time, and in Doomsday Book may be found over thirty entries of vineyards and various records of the wines they produced.

MORE MODERN EXAMPLES OF VINES AND WINE-GROWING.

Within comparatively recent times several large vines existed in different parts of the country. The large vine at Chilwell has been already adverted to, and there were others in Suffolk and in other places. At Hardwicke a Muscadine vine covered the greater part of a wall, and at Edward VI.'s grammar school at Bury, a vine was mentioned by Mr. Laurens, the head master, as covering forty-four yards of a wall ten feet high, with some of the branches clambering over and covering eighty-two yards more. There can be no doubt from these and other examples that might be given that the vine can attain a great size and live to a good old age in the climate of England. Nevertheless, English wine-growing is not likely to be extensively revived. That it is perfectly practicable is proved by the example of Mr. Darkin, of St. Peter's Vineyard, Bury St. Edmunds, Mr. Fenn, of Woodstock, near Oxford, and many others. A brief description of St. Peter's Vineyard will be in place here as a link between the present and the past, and a useful record of actual experience in grape and wine growing. The vineyard consists of three parts—a high wall nearly three hundred feet in length and twenty-two feet high, a seven feet border two hundred feet long, covered with cordon vines a yard apart and one foot from the ground, and about two hundred standard vines on the French system, a yard apart and a yard high. The wall faces south, then follows a path next the cordon border, and finally the standards. The cordon border falls three feet from the base of the wall to the lower level, where the root end of the cordon vine is. Had the whole place been formed on purpose for vine-growing it could hardly be more suitable. Both ends are enclosed by houses and high walls, and a row of cottages shuts out the north at sufficient distance not to cast a shadow on the vines. The average crop is from fifteen hundredweight to a ton of grapes from the wall, and from a quarter to half a ton off the cordons and standards. The quality of the grapes is excellent, and the wine, of various sorts, which has been made annually for many years, has been pronounced by competent judges to be good. Mr. Fenn's dry Woodstock wines have been tested in various ways, and were highly approved of at the great show at Birmingham the other day. Many others make good wines of out-of-door grapes, and numbers of cottagers grow their own desserts and wines also on the walls of their houses. There seems no reason why this should not become the rule throughout all the warmer parts of England. Nothing could clothe the bald walls of cottages and out-buildings with greater beauty than the clustering vine. Few fruits could add more to the simple luxuries of the middle and working classes. No fruit is so refreshing and nutritious as the grape. In France, Italy, and other countries, it forms an important portion of the food of the people. Bread and grapes is as common a meal in these countries as bread and beef in England, and some have held them to be equally strengthening and more wholesome. Be that as it may, the grapes would be useful as an alternative, and there is no reason, either in the nature of the vine, the character of our climate, or the difficulties of culture, why

thousands of the middle and working classes should not enjoy the rare pleasure of sitting under the shadow of their own vines.

To grow grapes successfully a few simple conditions are necessary. Some of the most important are the choice of a site, the selection of the soil and of the most suitable varieties, attention to such cultural matters as rearing, planting, training, pruning, manuring, and the pests and diseases of the plants, and the thinning, protecting, ripening, and keeping of the fruit. The instructions will be clearer and more convenient for reference if each of these points is noticed in order.

SITE AND ASPECTS.

The choice of a site, on the limited scale now contemplated, is a very simple matter, and is chiefly determined by aspect. The ancient vine-growers preferred the north side of a river, with the ground sloping towards it. They thus secured, as they thought, a maximum of heat and moisture. Thus the vine fields of Bury St. Edmunds were placed on the opposite and north eastern side of the small river Lark. They were also in favour of a chalky subsoil, as being warm and dry. Were I, however, about to attempt vine-growing, I should prefer the red sandstone to any other geological formation. Returning, however, to aspect; doubtless south or south-east is the best for vines. East, south-east, north, south-west, and west, exhaust the list of vine aspects. A south-eastern or south is mostly preferred. It is somewhat dangerous in early frosts, but vines do not break into leaf very early, and such frosts do less damage than the strong sunshine hitting vine leaves when pearly with rain drops or wet with dew. Supposing a south-west or west wall covered with vines, the sun, with almost noontide strength, bursts upon the leaves all at once, and may scorch or scald them if it hits them when wet. Again, if one has a choice, an elevated position is better than a dead level for vine-growing; not that one should choose the crown of a hill, and thus open the doors of the winds on the vines; but about midway up a rising slope, the cold north or other prevailing winds being barred out by higher ground, buildings, walls, trees, or other shelter, is the best site. In one word, get in as much heat and shut out as much cold as possible, and choose, if you can, a site for the vines where all this has already been done by nature, or may be readily accomplished by art. Again, the site should naturally be warm and dry below as well as above.

Some soils, such as most of those resting on clay and watered by springs, are naturally cold; such ought not to be selected for vines. A bottom of gravel, chalk, sandstone, or other rock, with a surface layer of sandy loam, makes the warmest bed for the roots of vines, and ought to characterise the site chosen. The question of site can hardly be exhausted without reference to the mode of backing the vines. For instance, the plants may be placed at right angles with the ground in open quarters, or, like raspberry canes, they may be led along from six inches to a foot from the surface, or displayed on the face of a wall of earth, mud, concrete, bricks, stone, glass, wood, or finally led over the tiles or other roofs of houses or out-buildings, or taken under a glass or other coping. Each of these positions will virtually furnish the vine with a fresh site and affect it accordingly. All of them are practicable for vine-growing in England, and thus those with the most limited means may often have considerable latitude in the choice of a site. It will be necessary to advert to some of these points again when I come to write of training, and therefore it may suffice here to state that roofs and walls afford the best sites for the perfecting of grapes in the open air in England.

(To be continued.)

GATHERING AND PRESERVING FRUIT.

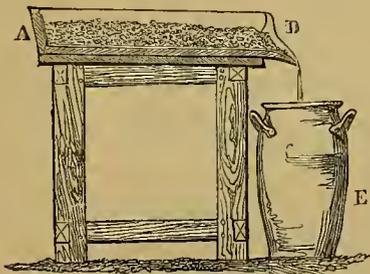
GATHERING of most fruits should be performed before the fruit is quite ripe; the quality and flavour will be better for it. But it will not do to anticipate their maturity for more than eight days for Pears and Apples, and one day for Peaches, Apricots, and Plums. Cherries should only be gathered perfectly ripe. Pears and Apples which are not ripened before winter must be gathered in October, or when the vegetation of the tree ceases. Whatever be the kind of fruit, it should only be gathered when quite dry, and on fine clear days. The fruit has then its finest flavour, and will keep much better. The best method of detaching the fruit is to gather it carefully one by one with the hand; various contrivances have been devised, more or less ingenious, for gathering those at the top of the trees, but all of them are liable to injure the fruit, and it is better to reach them by a ladder. As the fruits are detached they should be placed in a large shallow basket

lined at the bottom with moss or dry leaves. Not more than three layers should be disposed in one basket, and each layer should be kept separate by leaves. The fruit must be taken immediately under cover.

PRESERVATION of fruits applies mostly to those fruits which only ripen in winter. The object is:—1. To preserve them from frosts, which completely disorganise them; 2. To so manage that the ripening takes place gradually and is prolonged, for a portion of the fruit, until the end of May. The complete or partial success of this depends upon the construction of the fruit room, or place where the fruit is kept.

THE FRUIT HOUSE.—Experience proves that the fruit house or fruit room affords the most satisfactory results which fulfils the following seven conditions:—1. An equal temperature at all seasons; 2. A temperature eight or ten degrees above freezing; 3. Complete exclusion of the light; 4. Absence of all communication between the fruit room and the exterior atmosphere; 5. The place should be dry rather than damp; 6. Such an arrangement as prevents, as much as possible, the fruit being injured by the pressure of its own weight; 7. A northern aspect, on a very dry soil, slightly elevated. The floor of the fruit house may be either of wood or asphalt. The inner walls, and even the roof, will be better if lined with a deal wainscoting. All these precautions tend to the same important object, that of keeping the interior of an equable temperature, free from dampness.

CARE OF THE FRUIT IN THE FRUIT HOUSE.—The success of the preservation of fruit still depends upon the care taken of it while in the fruit house. As the fruit is brought in it is



Jar for receiving the Chloride of Calcium in the Fruit Room.

placed upon the table, which should be covered with a thin layer of dry moss. The fruit is then sorted, and each variety set apart; all the bruised and unsound fruit should be carefully put aside; the rest of the fruit should then be left upon the table for two or three days, in order to lose part of its humidity. When this time has elapsed, after covering the shelves with a thin layer of dry moss or cotton, and wiping each fruit carefully with a small piece of flannel, the fruit must be placed upon the shelves each half an inch apart, keeping the varieties separate. When the fruits are thus disposed of, the doors and openings must be left open during the day, at least when the weather is not too damp. Eight more days of exposure to the air are necessary, in order to allow the superabundant moisture to evaporate. Afterwards all the openings should be hermetically closed, and only opened when required to take out the fruit. No means, except currents of air, have, at the present time, been employed to remove dampness from the fruit house caused by the sweating of the fruit after it has been stored. There are serious objections to the use of air currents for this object. It subjects the fruit house to great changes of temperature, which are injurious, and to alternate light and darkness, which hasten maturity. The plan can only be adopted in dry weather and during the absence of frost; that is, it cannot be practised throughout a great part of every winter, and the fruit house must be left in its damp state, to the injury of the fruit. To avoid this we recommend the use of chloride of calcium. This salt has the property of absorbing so large a quantity of moisture (about double its own weight) that it becomes liquid after being exposed for a certain time to the influence of a moist atmosphere. We can, therefore, see that if a sufficient quantity be introduced into the fruit house it will absorb the dampness exhaled by the fruit. Quicklime answers nearly the same purpose. The chloride of calcium should be placed in a kind of

slanting trough (A, D) so as to allow the chloride, as it absorbs water, to drain off into a jar (E) set underneath to receive it. This liquid should be taken care of, and when required next year placed upon a fire and the moisture evaporated. The residue is chloride of calcium, which may be used again as before. The fruit house should be visited every eighth day to remove the fruits that are beginning to decay, to set apart those that are ripe, and to renew the chloride of calcium, as may be required.

DU BREUIL.

Plaster of Paris as a Manure for Vines.—I have a large quantity of Grape-vines planted in the open ground, and trained on poles and wires along the gravel walks. In planting these I had the holes dug about 25 inches deep; I then threw into each hole five or six lumps of old plaster of Paris, about the size of my fist. I threw a little earth over these lumps, and then planted the vines in the usual way. The result has been wonderful; the vines, which were not half an inch thick when planted three years ago, are now two inches and more in diameter, and bear finely. The Grapes are also freer from disease. Other vines, not so treated, are much smaller and produce less, the fruit being also more liable to disease. To try the effect of this plaster, in planting two American black Walnuts, we put the plaster to the one and not to the other. The former grew twice as fast as the other. Last year we dug about the roots of the one to which no plaster was put, and we threw in seven or eight large lumps of plaster among the roots; the trees are now both of the same size, and though only four years old are 16 or 17 feet high.—P. P., Italy.

The Parsley-leaved Bramble.—There is now to be seen in the nurseries of Messrs. Fisher, Holmes & Co., Handsworth, near Sheffield, a small plantation of what is called the Parsley-leaved Bramble, from which large quantities of exceedingly fine fruit have been gathered for some time. When I saw the plants a few days ago, they were still laden with fruit to an extent seldom or never seen in the Raspberry, and promised to afford a supply for weeks to come, as the fruit was hanging in all stages of growth, from the large ripe berry to the newly-set fruit. The fruit of this variety is black, large, long, and of an agreeable acid flavour. I was so struck with its apparent excellence as I saw it, that I ordered a quantity of it at once. There is no doubt that it will be a decided acquisition in every garden where a good supply of small kitchen fruits is required. As regards culture, in the plantation referred to the bearing canes were trained to poles about 7 feet high—one cane to each pole, and about the same distance apart. Trained in this way, each stem bears profusely from top to bottom, and forms a very handsome object indeed. This year's fruiting canes are cut down, I understood, during winter, and the successional canes, which, during the summer, are allowed to grow along the ground between the stakes, are tied up in their place and topped. The soil in which the plants were growing was thin and somewhat poor; and, though the plants were strong and prolific, it is quite probable that even better results would be obtained under more favourable conditions. It would be interesting to learn if any one has fruited the Bramble in a systematic way, what success they have had, and what varieties they find to answer best, &c. This Parsley-leaved variety, as it is called, is the most promising I have seen. [The above, contributed by Mr. J. Simpson, of Wortley, to the *Field*, points to the great desirability of making a trial of the various fine kinds of American Brambles which are of such excellent quality, at home. We have good reason to hope that these Brambles are destined to occupy an important place in English fruit gardens.]

Formation of Ozone by Plants.—C. Belucci has contributed to the *Italian Chemical Gazette* (p. 687) a note on this subject. The experiments of Scoutetten, Bineau, Kosmann, and De Luca produced results which led these observers to infer that plants are sources of ozone: Cloëz, on the contrary, appeared to show conclusively that the ozone was due to other causes. He passed the gaseous products from the plants through two tubes ranged side by side, and containing the iodized test paper; in one of these, which was exposed to the action of light, the test paper became coloured, while in the other, which was screened from the light, it remained unaltered, thus indicating that the action was due, not to ozone evolved from the plants, but to the effects of moisture, oxygen, and light on the test paper. The author has carefully repeated the experiments of Cloëz, and has devised new ones, in one of which he introduced into a large Wolfe's bottle of water saturated with carbonic acid, and containing a small quantity of potassium iodide, and starch, sprigs and leaves of the following plants:—*Taxus baccata*, *Juniperus virginiana*, *Abies vulgaris*, *Thuja orientalis*, *Prunus Lanro-cerasus*, *Buxus sempervirens*, and *Chara foetida*. The apparatus was then placed in bright sunshine, but no change of colour was observed in the liquid, thereby proving that the green parts of plants do not evolve ozone under the influence of the solar rays.

THE GARDEN IN THE HOUSE.

CULTURE OF PLANTS IN ROOMS.

(Continued from p. 258.)

PROPAGATION BY LAYERS, SUSPENDED POTS, AND PIECES OF THE STEM.

PLANTS which are intended to be layered in a room should be planted when the new growth is commencing, in wide flat pans, so that there may be sufficient room for the layers. If this is not done the shoots are to be bent down into another low pot or pan, filled with soil, and placed at a suitable distance from the mother plant. These shoots should either be stripped of their bark at the place where they enter the soil, or should be cut through to the middle on the under side, or split from one joint to another, like Carnations, or finally twisted, pinched, or notched in the part which is to be covered with soil. The first three methods are the best. The shoot is then bent down and fastened in the soil with a hooked peg in such a manner that its extremity, with some healthy leaves, may be uncovered. Pinks, Roses, Azaleas, Oleanders, &c., are in this way easily induced to root. The shoots of Verbenas are layered without being notched. No attention is required beyond that of keeping the soil moderately moist. As soon as the extremity of the layer is observed to be making a strong growth, that part of it which is above ground, next to the mother-plant, is to be half cut through, in order to diminish the flow of sap from the mother-plant, and so excite it to form roots more speedily and more abundantly. Later on, when it is evident that the layer has taken good root, it is to be separated from the mother-plant, by cutting it quite through in the place where it was previously half cut through. It should then be left undisturbed for about a week, after which it is to be carefully taken up without injuring the roots, and planted in another pot.

In room-culture it frequently happens that plants with erect, unbranched, or slightly branched stems (such as *Dracenas*, *Yuccas*, *Ficus*, *Aralias*, &c.), the stems or branches of which are too stiff to be bent down, grow into very large specimens, the lower parts of which are quite bare. The leafy heads of these may be transformed into handsome specimens by cutting half through the stem under the lowest leaves, and at this place suspending a pot filled with soil, which will surround the part where the incision has been made. Instead of the pot, a piece of birch-bark, twisted into the shape of a paper cornet, and filled with soil, may be placed round the stem at the place of the incision. If the success of this operation when performed in a plant-house depends on the soil in the pot or other vessels being kept uniformly moist, this is much more the case in the dry air of a room. Therefore a good layer of sphagnum should be placed in the bottom and around the inside of the pot, before filling in the soil, which should be well pressed together. The pot should be watered daily from a watering pot. The water absorbed and retained by the moss will keep the soil properly moistened. If this is considered a troublesome operation, it should be remembered that it causes such an abundant formation of roots that at the proper time the head may be completely removed and planted in a tolerably large pot, where it will form a fine handsome specimen. The best time for removing the head is in March, when the new growth has just commenced. The old leafless stump should then be either kept very dry until a fresh growth shows itself, or it may be cut up for propagation. In order to do this, all the soil should be removed from the ball, all the strong roots used as cuttings, and finally the stem itself cut into pieces from 3 inches to a foot long. These pieces of the stem should be placed horizontally in sand, which should cover them to the depth of not more than a line. If they are placed in one of the room hot-beds previously described, or in large pans covered with bell-glasses, it will be so much the better, as by this means a uniform and gentle moisture is secured. In a short time buds will break out from the joints of the cuttings, which will form shoots, from the base of which a circle of roots will soon issue. These cuttings may now be again sub-divided into as many parts as there are shoots formed, each of which will become a new plant. *Dracenas*, *Cordylines*, *Aloes*, *Yuccas*, and *Aralias* may easily be multiplied in this manner.—*Dr. Regel.*

(To be continued.)

FLOWERS FOR CHURCH DECORATION.

THE story is told of the Rev. H. Ward Beecher, that he cannot preach with his usual eloquence unless flowers are by his side and within his sight. The more beautiful the display, and the nearer to the vision, the stronger is the inspiration. The flowers best adapted for church decoration are classed under the head of winter and summer flowers. They might, indeed, be called outside and indoor flowers, as after the middle of May, and thence until the end of September, there is an abundance of outside flowers and foliage suitable for the purpose. As a large vase of flowers without foliage would be in very bad taste, I will also mention the foliage we use at each season, commencing with the winter:—Of flowers, it is necessary to have some good bold flowers of decided colours, or pure white. One of the best, and one that is much in demand at Easter, is the old *Richardia aethiopica*; and *Encharis grandiflora* is prized at all times. *Poinsettia* and *Euphorbia jacquiniæflora* are good; *Zygopetalum crinitum* is fine; a few good stems of *Tuberose* are also useful in the winter, on account of their sweetness; white and red Carnations; white and red *Bouvardias* for smaller subjects; with *Heliotrope* and *Stevia* for scent and light graceful flowers. A few extra fine *Chrysanthemums*, of a clear white, may be used, but other colours look common.

Passiflora princeps, both flowers and shoots, are used to hang down, with shoots of *Cissus discolor* and flowers of *Begonia Saundersii* and *B. insignis*. For foliage we use shoots of *Canna*, or leaves of *Richardia* and *Encharis*. Shoots of *Abutilon Thompsoni* are effective, especially by candlelight. Fronds of *Cibotium Schiedei*, *Polypodium aureum*, *Dicksonia antarctica*, and several species of *Pteris*; also the flower shoots and leaves of *Maranta Veitchii*, and the *M. Warceviczii*; the white flowers of the latter, with good leaves on the stems, are magnificent. A good shoot of *Arundo Donax versicolor* is also excellent for this purpose; and the long flower-spikes of *Cymbidium alofolium* as drooping objects, with the *Passiflora*, &c. For summer nothing is so useful as the Lilies and *Gladioli*; *Lilium longiflorum* is splendid for this purpose; also the new white Japan Lily, and an occasional flower of *L. auratum*, with *Canna* shoots, large hardy Fern fronds, shoots of *Hnnea*, and any graceful foliage which will last for the day without drooping. Roses are always desirable, and are used at all seasons, but as they do not mix well with other flowers and foliage, they are generally used in small vases alone, or with a few other choice small flowers, often with a small bunch of Violets or Lily of the Valley for the scent.—*James Taplin.*

Dried Ferns for Vases.—Dried in the ordinary way, between sheets of absorbent paper, these form excellent ornaments for vases and every kind of floral embellishment. The ferns look almost as well as when gathered, and some ferns, as the *Adiantums*, quite as well. They last for months, and, indeed, only become objectionable from deep coatings of dust. We have lately seen some beautiful vases furnished with these alone in Mr. Ambrose Balfe's house in Dublin.

The Influence of Vegetable Perfumes.—An Italian professor has made researches which lead him to assert that vegetable perfumes exercise a healthful influence on the atmosphere, converting its oxygen into ozone, and thus increasing its oxidising influence. The essences that develop the largest quantity of ozone are those of Cherry Laurel, Cloves, Lavender, Mint, Juniper, Lemons, Fennel and Bergamot; those that give it in less quantity are Anise, Nutmeg, Cajeput, and Thyme. The flowers of the *Narcissus*, *Hyacinth*, *Mignonette*, *Heliotrope*, and *Lily of the Valley* develop ozone in closed vessels. Flowers destitute of perfume do not develop it, and those which have but slight perfume develop it only in small quantities. As a corollary from these facts, the Professor recommends the use of flowers in marshy districts, and in places infested with animal emanations, as the powerful oxidising influence of ozone may destroy them. The inhabitants of such regions should surround their houses with beds of the most odorous flowers.

Remarkable Elastic Force of Capsules.—At a recent meeting of the Academy of Natural Sciences of Philadelphia, Mr. Thomas Meehan stated that, while travelling through a wood, he had been struck in the face by some seeds of *Hamamelis virginica*, the common Witch-Hazel of the United States. He gathered a quantity of the capsules of this plant, in order to ascertain the cause of the projecting power and to measure its force. Laying the capsules on the floor, he found the seeds were thrown generally from 4 feet to 6 feet, and in one instance as much as 12 feet. The cause of this immense projecting power he found to be due simply to the contraction of the horny albumen which surrounds the embryo. The seeds are oval, and are enclosed in a smooth horny envelope; and when the albumen has burst and expanded sufficiently to get just beyond the middle where the embryo narrows again, the contraction of the albumen causes the embryo to slip out with force, just as we should squeeze out a smooth tapering stone between the finger and thumb.

THE WOOD STREAM.

WATER is mostly valued for its effect in the open glade or lawn, but if we follow it as it hides in shrubbery, plantation, or copse, we shall find many a charm there. In deep gorges in the milder parts of the country, where the Portugal Laurel and other evergreens thrive, they never do so with greater vigour than on the banks of streams, which they often quite shade over with their luxuriant growth. In those happily-situated gardens where natural streams run, there is no occasion to plead for a freer and purer treatment of the banks and the course of the stream than that commonly adopted, but in many gardens where artificial lakes are made, it would be a great gain if the gradation of the banks of natural streams were more studied. There is no reason whatever why there should be an offensively stiff or straight margin to our artificial streamlets. With reference to the wooded portions we are now alluding to, much yet remains to be done in the study of suitable subjects. We must not stop at Willows, and suppose they alone are suitable for the water-side. There is a number of shrubs and trees that are more at home near a streamlet than on drier ground. Many of the fine North American shrubs and trees, from the curious Button Bush to the tall Nyssas, enjoy a wet bank as well as the stately deciduous Cypress or the cut-leaved Alder—two grand trees better known to us but not used so much as they deserve. In plantations by streams, the planting is apt to thicken, so that the character of the individual trees is often seen with difficulty, but wherever there is a little opening or reach in the streamlet the forms are better seen. To make some rather open pools in a river or stream running through a plantation would be a capital plan, as the expanse of water fulfils the part of an open lawn in the hands of an intelligent landscape gardener. It permits us to see the objects placed around it. It moreover cannot so easily be spoiled by some well-meaning but not clear-seeing person dotting it over with young trees as regularly set as Cabbages; a fate that blights many a pleasant lawn. Some of the finest

living tree pictures we have seen, either in gardens or in Nature's woods, had water for a foreground; and there is no more agreeable phase of planting than that of forming a setting to what we may term an islet of water in a wood.

School Gardening.—This subject, which was recently discussed by Potomac fruit growers, we condense from a report in *The Maryland Farmer*.—Mr. J. L. Smith gave the description of a German school. In the rear of the school buildings there was a large garden, which was divided into squares of about 125 square feet

each, and which was entirely devoted to the use of the pupils. Those scholars who distinguished themselves in behaviour, application, &c., were picked out and divided into clubs of three. Each of these clubs was assigned the use of one of the aforesaid squares, which they were to cultivate themselves with flowers, vegetables, and various kinds of fruits. The tools were furnished by the school, while the scholars found the seed. During the recess, instead of climbing about or indulging in other dangerous plays, it was the greatest pleasure of the scholars to work in their garden. Those who did not take particular care of their portion were dismissed, and others put in their place. On that account each scholar tried to excel the others; each tried to lay his portion out in the most handsome design; each wanted to have the prettiest flowers. In fact, it was a pleasure to look at the gardens to see as many different designs as there were squares each filled with the most beautiful and fragrant flowers, and making itself a great instructor. Col. Chamberlain was glad to hear these facts, but said that it was doubtful whether boys, within schools generally, would allow the fruit to mature—the result of the experiment would be a scramble for the ripening prizes. Mr. Smith replied that it was an important object—to train youth to regard and esteem these useful matters in the right light, to use them at the proper



The Stream in the Wood.

times, and not in the least degree to prove themselves to be selfish pilferers.

WE are sorry to learn from the *New York Tribune* that "Professor Demker," who appears to have charge of the landscape gardening in the Central Park, "has improved upon the Parisian style of contrasting colours in flowers, by restoring those whimsically-shaped parterres which were so greatly the fashion a hundred years ago. There are parterres shaped like butterflies, Maltese crosses, true-lovers' knots, baskets, dragons, lizards and others of nondescript appearance." From what we saw of the magnificent public parks in America we had been led to hope that they at least would not be violated by barbarous puerilities.

EFFECT OF ACID GASES ON VEGETATION.

THIS action of acid gases on vegetation causes more complaints against chemical works and other factories than any other purely external circumstances connected with them. Although we know very much on the subject, I hope that one of the advantages of the many Reports under the Alkali Act will be to enable us to know when the air is so much acidified as to make vegetation hopeless. We require only to examine the rain or air of a place and compare it with those of places which have and which have not been injured. We must, however, compare places as much as possible in a similar climate, the driest allowing more acid without injury. We do still better, if we can obtain experiments made in the place itself which is the object of complaint, injury, or study. Having examined many plants in order to see if it were possible chemically to show that acid gas has been the cause of injury to them, I have come to the conclusion that it is in our power in many cases. The Belgian Commission came to a similar conclusion. I do not, however, feel able to speak so decidedly as the members of that body in all cases. If, for example, the leaves are broken, from whatever cause, the juice of the plant giving out hydrochloric and sulphuric acids, as chlorides and sulphates, presents a great difficulty. Care must be taken on this point. Many plants contain chlorides even on the surface of the leaf, at a great distance from alkali works, and comparisons must be made with caution before drawing conclusions. The larger spots made in gross cases can often be pronounced at once to be caused by acids.

There is, however, a deterioration which cannot be chemically traced to acid gases, and which the Belgian Commission decidedly pronounces to be the result of other causes, being accompanied with minute fungi. Before going so far in this other direction as these gentlemen, it seems better to wait until we can answer these questions: Is it not possible to cause, by means of gases, a deterioration in the atmosphere sufficient to effect an early decay of plants without injuring the life of fungi? And is it not possible that the weakness of the plant may rather subject it to the attacks of fungi? The Belgian report mentions 2,000 metres, as the greatest distance from chemical works at which damage was observed. This must depend on the size of the works, and the number which are together. In this country, 2,000 metres, or 2,187 yards, is a distance sometimes found quite insufficient for protection. It is mentioned that during rain the damage does not extend so far, although it is more severe, because the rain washes the gas down to the ground near to the place of exit. It may be also mentioned that in moist weather, with a low barometer or light and wet air, the rise of gas cannot be so high as with a high barometer; when the dew point is low the gas is more readily condensed. This happens in the damp atmosphere during the day, but it is more observable during the night, leading many persons to suppose that the gas is given out at night, even in cases where no such plan is ever attempted. It is on these wet days that the roots are injured. The Belgian Commissioners say little of roots, still it is clear that both in Belgium, France, and Germany roots are destroyed and the ground laid bare, whilst actions for damages are not wanting. The remarks made in the Belgian report regarding the protection given to crops by the undulations of the soil will be remarked with interest. Many have observed that a hedge, or a tree, or a wall, have remarkable influence; the side from which the wind blows may have the vegetation below it burnt up, whilst the hedge itself will be greatly injured, whereas on the other side both the hedge and the crops below it may be safe. Gaps allow the wind to pass through unaltered, and to do injury. Indeed, I have observed a slight wall, and also a board not many inches higher than the plant protected, to be in some bad cases quite efficient. How is it possible? has been asked. Does the gas go in straight lines unmixed? We know that dry gas does not do so in dry air; it mixes with the air, and is every moment more widely spread. Then why does it not mix with the air behind the protection? The best reason assigned is, that in the case of the acids which are generally found guilty of doing injury, there is no gas mixing uniformly with the air. The gas is absorbed in small globules of water, and these are thrown forward by the currents of the wind, and are driven over any wall or interruption to a distance in a curve from the top. If this is a true explanation, it is an extremely interesting one; the peculiar effect is not confined to visible vapour, as far as I can ascertain. Shall we proceed further, and argue from it that the vapour of the air does consist of small particles of liquid? Shall we not rather argue that the acid present attracts water, and the completely gaseous form is therefore not retained in a moist climate? It might be asked whether the cause is not the same in character as the protection of snow from being melted by a warm wind when that wind blows behind a wall, and can roll over it on to the snow beneath?

Here the rapid changing of surface in the case of direct blowing

is productive of much more rapid action. To vary the words, Is it analogous to the case of cooling, freezing, or hardening of the same snow when a cold wind blows directly upon it, whilst the snow on the other side is protected and remains soft? There, again, the influence of rapid change of surface comes forward. In the case of the acid there is also a rapid change of air. Nevertheless the fact of the dry atmosphere removing the evil seems to decide that rapidity of flow and frequent change of the air is not the cause, but that the real cause is in the many and minute globules of water which are formed with or without the aid of the acids, and which become saturated with the gases in the air; these retaining some of the solids are tossed as solids, are tossed or driven by violent winds in direct lines according as they are in the full currents or in side currents, or are caught by eddies and whirlpools.

In 1867, I requested Mr. Rothwell, of Croft, near Warrington, to give his opinion regarding the action of acids on plants. He had been very often employed to estimate the amount of damage done at St. Helen's, and I had, and have, much confidence in his judgment. He sent the following:—

Capacity of Plants to resist Acid Fumes.

Violent winds rattle and break off the leaves of trees and shrubs, and damage herbaceous plants, such as corn, &c., by breaking the stem, and thus stopping the flow of sap, and in the blooming season of any plant or tree lessen or injure the crop for that year. But generally there is a clear distinction between damage done by a storm and that by a bad vapour. The latter shrivels and curls up the leaves, does not break them off or make them ragged. A storm never discolours the bark of a shrub or tree, or makes it fast to the stem. Bad vapour does both. With a low barometer and a gentle air travelling at the rate of a mile in the hour, the vapour sweeps gently along near the surface of the earth, and does great damage to plants. A storm and bad vapour together do great damage in summer. As respects fruit trees, I am also at a loss to say which are soonest affected; but my idea is that Cherries, Greengages, and other finer sorts of Plums are sooner injured in the fruit, but not in the foliage. I think Damsons are soonest affected in this. Fruit trees, I think, should be in Class No. 1. I send a list of trees and plants soonest affected by noxious vapours, and in the order they are put in this list, according to my views, but will not vouch for its correctness, as I have not paid much attention to the order in which they are affected:—

Forest Trees.

Larch.
Spruce Fir.
Scotch Fir.
Black Italian Poplar.
Lombardy Poplar.
Ash.
Oak.
Elm.
Birch.
Alder.
Sycamore.

Shrubs, &c.

Common Laurel.
Portugal Laurel.
Aucuba japonica.
Barberry, Evergreen.
Hazel.
Gnelder Rose.
Sloe Thorn.
Hawthorn.
Raspberries.
Gooseberries.
Blackberries.
Gorse.
Hollies.

Fruit Trees.

Damson.
Greengage.
Halewood Plum.
Jacob Plum.
Pears.
Apples.
Cherries.

Farm Crops.

Potatoes.
Mangel.
White Clover and Rhubarb.
Red Clover.
Trefoil.
Rye Grass.
Wheat.
Oats.
Barley.
Common Turnips.
Swedes.

Nothing is affected sooner than the common Fern, the Lady Fern especially; Mare's tail and Royal Fern also.

From noon of October 26th, 1867, to noon of the 28th the weather was very stormy, the wind varying from S.W. to W. and N.W. To the east of St. Helen's and Widnes Common Turnips were *very much* damaged in the leaves; Mangel *much* damaged; and Swedes a little. Thorn fences and Fern much damaged. The bulbs of the Turnips, &c., would not be much, if any, less in weight, as the season was too far advanced. I therefore put no damage on those crops. Young Clovers in the stubbles were much damaged, but I only put a money value on this in one instance, when the young Clover was much advanced in growth. In all other cases I considered there would be no injury of any importance. The manufacturers considered the damage was by the salt water from the sea. As it was possible that this might be the case, I made up my mind to prove it. I therefore proceeded by rail to Rufford, and then walked across the country, passing between Prescot and St. Helen's to Cronton, and then from there by Widnes to Warrington. At Rufford there is a clear sweep from the sea, without any town or works intervening. Here there was not the least damage to be seen, and this was the case till I got in the line of Liverpool and Prescot; then damage was distinguishable to fences and root crops (there was no corn out), but nothing like to the extent as to the east of St. Helen's and Widnes. All right about Cronton. From Widnes to near Warrington very bad. This showed that the smoke of

Liverpool and Prescot had a bad effect, but not equal to that of St. Helen's and Widnes.

The sea in that storm did no harm so far inland.

Second List of Plants affected by Noxious Vapours, mixing the Classes according to the effects produced on each.

I.

- Fern, only in the summer.
- Scotch Firs, Spruce, and Larches, a little in winter.
- Clover, white and red, receives damage in winter to the roots.
- Trefoil " " " "
- Rye Grass " " " "
- Poplars, Hawthorns, Potatoes.

II.

- Wheat receives some damage in winter.
- Oats, in May when in the grass state soon receive damage.
- Barley, Mangels, Common Turnips, Rhubarb.

III.

- Laurels, Common and Portugal
- Ancubas " " } These plants receive damage
- Yews " " } in winter, but more in
- Holly " " } summer.
- Gorse " " }

Old Grass meadow and pasture receives much damage in the winter.

IV.

- Ashes, Oaks, Hazels, Horse Chestnuts, Walnuts, Spanish Chestnuts, Sloe Thorn.

V.

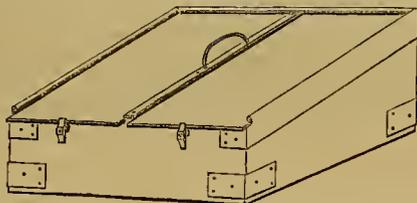
- Swedish Turnip and Cabbages, Damson, other fruit trees, Beech, Elm, Birch, Alder, Sycamores.

Trees exposed to noxious vapours get bark-bound, and then cannot thrive, and thus they take damage in the winter. The sap cannot flow when spring comes. Grass-land takes as much damage in winter, I think, as in summer, as it is more exposed in winter, and the bad vapour floats more on the surface of the land. On fields much exposed to the vapours handfuls of dead grass can be pulled up in the spring, smelling strongly of the vapour.

W. R.

GILBERT'S REGISTERED HANDLIGHTS.

THESE lights have been in use at Brughley for the last twelve months, and answer perfectly; they are employed there for many purposes. From August to September they are filled with cuttings of Pansies, Forget-me-Nots, Geraniums, and bedding plants of all sorts. From October to February they contain Cauliflowers and Lettuces; and from February to March



and April, tender annuals are raised in them, as are also Carrots, Celery, and Radishes. When done with for these and other seeds, they are used for pricking out Celery and Cauliflowers, until the end of June, when they are put over Strawberry plants, to ripen the fruit early; in fact they are always at work; they form acceptable protections to Cucumbers, Vegetable Marrows, and all tender things which require protection. They are constructed of wood and wrought iron combined, the iron forming the grooves in which the glass slides for the purpose of giving the requisite ventilation and attention to the plants within. They are made in sizes ranging from 12 to 22 inches square, and are glazed with 21oz. glass. No putty being used in the glazing, a broken pane can be at once replaced. They are very handy, and not expensive; at Chiswick they are great favourites.

The Decomposition of Carbonic Acid by Plants in Coloured Light.—Prillieux and Baranetzky have maintained that the power of plants to break up this gas is dependent, not on the colour of the light to which they are exposed, but on the degree of its brilliancy. The incorrectness of this theory has been established by Sachs and Pfeffer, and a recent paper by the latter observer gives the results of his experiments on this question. He exposed a water plant in turn to the several parts of a very brilliant and extended spectrum, formed of concentrated solar light, and observed the number of bubbles of gas given off from the surface in a given time; from his results he drew up the following table:—

Red	25.4	Green	37.2	Indigo	13.5
Orange	63.0	Blue	22.1	Violet	7.1
Yellow	100.0				

THE KITCHEN GARDEN.

CUCUMBERS AND COCOA-FIBRE REFUSE.

MANY improvements in culture have been found out by accident, and I think I have made an accidental discovery in Cucumber culture. Last year I ordered some seeds of Long Gun Cucumber, to be sown to plant in a house intended for seed. When the plants from these seeds were large enough to plant out, the house which had been filled with Cucumbers all the spring was bearing so well I thought it quite a shame to destroy them. I hardly knew what to do, not liking to destroy plants full of fine fruit; and yet what was to be done with new plants quite large enough to replace them, which would soon become unhealthy if confined in small pots? Besides, as it was getting late in the season, it would not do to check the growth of the young plants, if they were to ripen good seed. Thinking to get over the difficulty, I had the young ones planted in 10-inch pots, and grown in another house for some weeks. Determining at last to place them in the house in which they were intended to seed, I had all the fruit out, a lot of sulphur burnt in the house, to destroy every trace of insects (a precaution we always take), and the soil having been all removed the young plants were brought in. Now there was another difficulty; these younger ones were now so strong that they could not be turned out of the pots safely. I told the man to place them on the bed, which is warmed by hot-water pipes, and fill up the spaces between the pots with cocoa refuse. The roots immediately grew over the pot sides into this material in the most extraordinary manner, and the beauty of the foliage and fruit showed how thoroughly it was enjoyed. I never gathered a better lot of seeds, and was so satisfied with the plan, that it has been followed this year from choice. There is now a house here of the same variety, "Long Gun," cultivated in the manner described, which I think may be matched against any house in the country for number and beauty of fruit. As to quality, tested by eating them, I think them unequalled. Surely there must be more in cocoa refuse than people think, or the Cucumber requires less than is generally imagined.

J. R. PEARSON.

Chilwell.

THE POTATO DISEASE.

PROFESSOR HENSLOW'S advice to grate down diseased Potatoes for their starch is not always practicable; for they are often so obnoxious both to handle and to the smell as to render desiccation impossible. Then we are told that of the component parts of a Potato but 20 per cent. are starch, so that if one-half be absolutely unsound or rotten, and the other half still firm, for all the labour expended in the process of desiccation but 10 per cent. of starch would result out of the entire bulk. The fact is that not one person in a hundred who has diseased Potatoes will adopt Professor Henslow's suggestion, and therefore it is practically valueless. What we want, and what we have a right to demand, at the hands of our so-called scientific men, is some information as to the nature of the disease, its causes, mode of operation, and what means should be adopted to check it, and, if possible, exterminate it. But unfortunately our cleverest students of vegetable physiology are as much at sea on the subject as the veriest tyro, and beyond the declaration, doubtless correct, that the disease operates in the form of a fungus, we have no further reliable information. The fungus theory, however, still leaves us in the dark as to whether it is really fungus that causes the disease or whether it is but a result of vegetable decomposition produced by other means; and, in any case, we are ignorant from whence the fungus or the origin of it proceeds. What, in fact, is the great first cause? The enquiry is greatly complicated by the singular eccentricity of the disease, and the manner in which it operates on different kinds. Thus, two kinds, almost identical, are growing side by side; in both the haulm is literally blackened and burnt up; but when the tubers are lifted, one sort is comparatively untouched, and the other has its tubers nearly all rotten. Why such a result as this? Who can tell the reason? Both of those are white sorts. Then two coloured kinds, very equal in growth, cropping, and quality, grow close together, the haulm of both dies, but the tubers of one sort—a purple—are only one-eighth bad, whilst in the other (a red kind) three-fourths are diseased. Then, why does a very white mealy cooking Potato invariably suffer more than a yellow-fleshed kind, other qualities being similar? And why is it that some kinds one year suffer severely, and at other times, although disease prevails, comparatively escape? I observe, moreover, this peculiarity, that whilst some tubers are bad only at the eye end, others have the disease only at the other end. In the one case, observers have said, "Here is plain evidence that the disease affects the young tubers from out of the soil," whilst others, in the second case, have affirmed that evidence is afforded that the rot enters the tuber from

the haulm downwards. Thus the different phases of the disease bother us so much at every stage that we are scarcely wiser now respecting it than we were when it first became rife amongst us. Is the solution of the mystery to be found in the fact that the Potato used to thrive better during our old-fashioned summers than it does now-a-days? and that just as we begin to improve its quality as an edible vegetable, really to the loss of some of its power to resist unfavourable climatic influence? Our seasons have developed a change for the worse, and when a cool, wet summer, or portion of a wet summer, prevails, positive decay is the result. It seems that only by this sort of reasoning can we explain the facts, first, that in warm seasons the disease is usually mild in its effects, and, second, that in the coarser kinds, which approach nearer to the original parent, the effect of disease is less visible. It will be rather hard if, in the future, we can only grow our best kinds in a healthy state under glass.

A. D.

This disease has broken out with vigour on the rich alluvial soils at the head of the Wash, where annually thousands of acres are devoted to Potato cultivation for the London markets. All along the Holbeach and Long Sutton marshes the loss will be immense, as, awhile ago, crops which would have been worth from £20 to £25 per acre are now not worth the labour of taking up. The failure will fall with crushing weight upon market gardeners, and even upon labour employed in Potato cultivation, for where £200 has been spent in an ordinary year upon taking up the crops and sending them to market, this year they cannot cost more than £50. In nearly every county in England Potato disease has made its appearance this season.

An examination of a healthy Potato, says Professor Gardner, shows the presence of about 75 per cent. of water, 16 per cent. of starch, 2 to 2.5 per cent. of albumen, fibrous matter about 1.5 per cent., gum 1.5 per cent., the remainder consisting of colouring matter, a substance giving flavour, called potatine, and mineral substances. A diseased Potato when analysed is found to be wanting in albumen and in sugar. The amount of starch, gum, and fibrous matter remains unaltered. Consequently a diseased tuber may be considered to have undergone a species of azotic fermentation, in which the albumen decomposes, and in its destruction the sugar of the tuber is involved and disappears. The starch in both the healthy and diseased tubers is unaltered in amount. In appearance that of the diseased tuber is much discoloured, but otherwise is not deteriorated in its quality and value. Extracting starch from diseased Potatoes is an old method, but at the same time a simple and most effective means of saving a considerable amount of the Potato food. If tubers when first discovered to be unsound were treated with a very weak solution of carbolic acid, the decomposition then proceeding in them would be arrested, and some portions of the nitrogenous matter saved.

What might be done with considerable advantage just now in reference to Potatoes, says a correspondent, is this:—All that are ripe might be cleared off the ground at once, and their places taken by Cabbage plants and Turnips of some quick-growing kind. By this means, quantities of winter and spring produce might be grown.

I have for years, says Mr. Hallett, selected my Potatoes for seed, and upon the assumption that the disease reaches the Potato through the haulm, have always rejected the whole of the produce of any plant which presented any appearance of disease; and, although this may have been manifested on only one of its forty or fifty Potatoes, and even on this but slightly, I have rejected them all as of "tainted blood." The practical result has been an almost complete immunity from disease. My present crop yields three heaped bushels per rod (four of the Potatoes weigh three pounds), is now being dug up, and no signs of disease can be discovered.

In the deplorable state of the Potato harvest, our correspondent "O," enquires, might not something be done by those who by constant residence amongst their people, have gained their trust? Dr. Hooker's excellent and tried practical advice, which would be followed with perfect confidence by almost all educated people, needs amongst those so uninstructed as many of our cottagers are, a helping hand to clearly explain the details, and a statement from somebody who has lived amongst them, and in whom they trust, might convince them that a wholesome food can be made from such an unsavoury mass. Something to assist the poor might be done by those who have the means, if they would offer to buy from their poorer neighbours the starch produced by grating the diseased Potatoes. The price might be a low one, and the food thus saved from being absolutely thrown away might be safely stored to be again given out when required. As I have a good deal to do with the poorer classes, I am now endeavouring to teach them the simple plan of saving the starch by placing a sieve on the top of a large pan full of water, and grating the Potatoes through the sieve into

the water, throwing away the useless parts. The starch flows readily through the sieve to the bottom of the pan, and after a washing or two with clean water, which is poured from it, it is dried on a clean cloth in a warm place, and laid by for future use. This starch I have offered to buy at a fixed price, meaning to keep it for distribution when needed at the price given for it, or a lower one if necessary.

Mr. M. H. Sutton states that "the fact, so well established by reference to recorded observations, that the most destructive seasons were those in which there were most thunder, lightning, and rain, confirms the opinion that the atmosphere is the principal cause, though I have seen no evidence that the electric fluid (as sometimes supposed) was the immediate cause of the destruction. If, however, the atmosphere were the only cause, our hopes for the future might be but faint, the elements being beyond our control; but by oft-repeated experiments and extensive observation, I am satisfied that the remedy, or rather the means of prevention, are placed within our reach, and will be compassed by the intelligent and persevering gardeners and farmers of the present generation. The other principal causes or aggravations are:—2. Insufficient drainage of the land. 3. Insufficient ventilation of the crops while growing (the land being frequently half covered with fruit trees, or surrounded by hedgerow timber). 4. The continuing to plant and replant the same land year after year with the very same sort of Potato. Other causes might be mentioned subordinately (as unsuitable or superabundant manure), but I believe that the four above specified are beyond comparison the chief causes—and I write, not from conjecture, but from actual experiments made in every variety of soil and circumstances. If this conclusion is correct as to the cause, the cure, or means of prevention, would appear to be self-evident—viz., by discarding old sorts, and planting in well-drained land, free from obstruction by trees, hedgerows, or buildings, such new seedling Potatoes only as have hitherto resisted the attacks of disease, and might be termed 'murrain proof.' That there are such varieties is certain; not that all, nor the majority of the sorts raised from seeds or berries are 'murrain proof,' but some among them are found to be so."

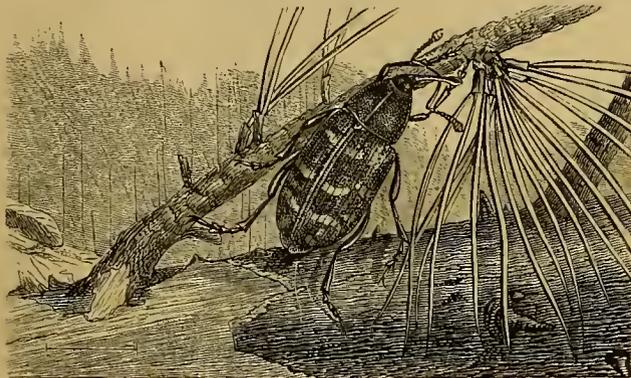
The Potatoes in my little garden, says the Rev. H. Moule, last year exhibited some frightful instances of disease. This year those either saved from the former crop or some of the same kind purchased (most of them the "Early Rose"), were set in the same ground; and without any idea that the Potato any more than, as I believed, the Pea, would be affected by the presence of silex in the manure, I had about an ounce of that, which I have since named the "Phospho-Silicon Manure," placed under each tuber when planted. The manure in the previous season was applied in the same way, and in larger quantity, and differed from this only in the want in the former of silex, salt, and bone-dust. The planting in the former year was in lines 3 feet and 4 feet asunder, and 1½ or 2 feet in the line, and each Potato was earthed up to a great height. This year the plants were not earthed up; but the ground between them (they were 2 and 3 feet apart) was well forked. From the first they showed a strong and vigorous growth. In some cases the haulm was so luxuriant as to require to be supported by a stout stick. In the greater number, although the haulm stood 2 and 2½ feet high, there was no need of such support. Under those whose growth was the most luxuriant the tubers were the largest and the most abundant. Now, although the blight has affected more or less severely every garden and field in my parish, not a diseased tuber has been found among these Potatoes. Occasionally, during the month previous to the digging of the last portion of the crop, the dark spot appeared on a leaf here and there, but it never was attended by the withering of the plant or stalk, or even of the leaf itself.

C. Roberts, F.R.C.S., advises us, in seeking for a remedy for the disease, to direct our attention to some of the substances which have a well-known destructive action on the lower forms of vegetable and animal organisms. Sulphurous acid and carbolic acid have very decided properties of this kind. Probably very light dressings of M'Dougall's or Calvert's disinfecting powders, which contain carbolic acid, might be found useful; but carbolic acid, being highly poisonous, is not available in any other form. Sulphur, which contains a trace of sulphurous acid, is used extensively for the destruction of the hop and vine disease—both produced by the ravages of parasitic fungi—but it will be found to be too expensive, and, probably, not very efficient; the modified form of it, however, containing a large quantity of sulphurous acid, now being introduced into commerce, under the name of sulphozone, will, no doubt, prove a cheap and highly efficient remedy. Potatoes should be stored in a dry place, and, if practicable, exposed from time to time to the fumes of burning sulphur. The sulphurous acid so produced would retard the progress of the disease, and prevent further infection, without in any way injuring the tubers as articles of food.

GARDEN DESTROYERS.

HYLOBIUS ABIETIS.

THE insect which is represented magnified in the accompanying wood-cut is a stout good-sized weevil of a blackish brown colour, slightly marked here and there with yellowish hair or scales, which on the back of the elytra run into two or three transverse irregular patches or bands. It is about six inches long. The larva is a thick fleshy wrinkled white grub, with a reddish-brown head and blackish mandibles. It has neither eyes nor feet. The insect is found in Pine woods or near Coniferous trees, on which it feeds both in the larval and perfect state, and at times does sufficient mischief to the trees to throw their growth perceptibly back; but although it feeds on the Fir, both in the grub and beetle stage, it is by no means equally injurious in both; and contrary to the usual case, it is less injurious in the larval than in the perfect state; and the reason of this is that the larva feeds on dead wood and rotten roots, while the beetle feeds on the juices of the living tree. The eggs appear to be generally laid in the roots of dead trees, where the larva passes its life, apparently working upwards, and its life appears to endure over more than one year, the winter being spent in the grub state, from which it passes into the pupa state either in spring or towards the end of summer. It is inferred that this is the case, and that there are two broods in a year, because



Hylobius Abietis.

the beetles are sometimes found in extraordinary numbers, first in May and afterwards in August, sometimes also in June and July.

The injury which is done by the perfect insect is occasioned by its eating away the bark of young trees or of the twigs of older trees in order to feed on the sap which flows from the injured surface. That this is the purport of its decorticating the young bark may be inferred from the fact that they congregate in numbers around saw-pits in Fir plantations so long as freshly sawn timber is lying about, and they may be observed on the fresh surfaces of the newly sawn Pine wood busy supping up (or at least doing something with) the globules of liquid resin which have oozed from them. By-and-by, when the logs are no longer fresh and the resin has ceased to flow, the saw-pits and their vicinity may be searched in vain for a single specimen.

Kollar says that the injury which they commit is very sensibly felt on the felled timber, and even on the growing seedlings, thereby injuring the cultivation of the Pine in the vicinity. He also observes that they do not spare other kinds of plants, having been found on Rhododendrons, Azaleas, and Alders. We can from personal observation confirm this statement so far as regards their being found on other plants than the Pine, although our observation does not carry them beyond Conifers. One of the most striking specimens of injury done by it that we have met with occurred on a Californian Thuja, in which the bark of the young twigs had been entirely eaten away. The way in which it is eaten is rather peculiar and sufficiently characteristic to allow one to recognise the work of the species, and from it to specify the culprit. It does not eat

straight forward, but in little roundish kidney or bean-shaped patches, which run into each other, reminding one of a case of confluent small pox. The wound it makes is pretty deep and irregular, penetrating through the inner bark to the sap wood, and is long afterwards recognisable by an ugly scabby-looking appearance on the bark, caused by the issuing of the resinous drops, which harden in course of time, and remain like a whitish scaly scurf. The buds are also objects of their attack, and, of course, when these are eaten into, farewell to all chance of any good being done by them.

We have never ourselves seen anything of the kind, but Kollar mentions (speaking, we presume, of Austria) that young slender Pine trees are often so much gnawed by these insects that they are easily broken down by the wind; nor can we say whether or not the further statement by the same author is well founded, that the Hylobius prefers those trees that are just planted and sickly, in which the motion of the sap is more stagnant, and when their attacks are not opposed by such an obstinate resistance of the escape of resin.

The insect is tolerably abundant in Britain, especially where Fir plantations exist; and its range extends generally throughout Europe, and into Siberia, &c. A closely allied species also occurs in North America. The habits and mode of life of the larvæ indicate the remedy for this species, viz., to grub up, collect, and burn the roots and dead wood which might serve as a nidus for the eggs or food for the larvæ. A. M.

Poisoning Cockroaches.—We are informed by Mr. Anderson, of Meadow Bank, the famous Orchid grower, that he destroys cockroaches with certainty by using a mixture of one part arsenic, one part white sugar, and one part lard, all the three to be white. It is essential that the arsenic be white, or failure will result.

Tinea Gossypincola.—The cotton crops of Egypt have been invaded by immense swarms of this insect, which has caused ruinous losses to the proprietors. The larva pierces the pods in order to reach the seeds on which it subsists. Its ravages have become so alarming, that the Egyptian Government has appointed a mixed commission of cotton growers, physicians, and botanists, to inquire into the causes of this new "plague of Egypt," and to indicate, if possible, some means of arresting it.

"SCIENTIFIC MEN."

OUR observations on this matter, intended to show that the common opinion which regards "science" as essentially distinct from knowledge is demonstrably a vulgar and mischievous error, has brought us a communication from Mr. Worthington Smith, a distinguished fungologist and botanical artist—a man of knowledge (science) in the true sense of the term.

Allow me (says Mr. Smith) to entirely differ from your estimate of scientific men, and to dissent from Mr. Gladstone's definition of "science," (and yours too) which I consider very bad. Scientific men are not merely "men of learning," (Mr. Gladstone notwithstanding) and if the writer in the *Globe* believed "science" to be "something quite different from the knowledge possessed by ordinary mortals," I venture to think he was quite right in his supposition. Bear in mind, please, what Carlyle says—"Most men are fools" (let alone the rogues). Science, as I understand it, is the special and systematised knowledge demonstrated by the many, acquired and prosecuted by the few—as distinguished from the empirical, blundering, speculating and guessing of "fools." The way you distinguish a gardener from a botanist (p. 135) is altogether unjust; the generality of gardeners are not "perfectly conversant" with plants "in every way," and botanists generally do something more to earn their title than to "betray a taste" for drying the plants the "cultivator grows." There are degrees of science as in art, and there are too many empirical professors and quacks in both. As an artist I often get a stab myself from "artists in hair," and other impostors who use so little "science" in the practice of their art.

Mr. Smith, it will be observed, while differing from us, does not take the trouble to prove anything. He, however, gives us a perfectly understandable classification of men,—"fools" on the one hand, and "scientific men" on the other. As we have long experience of how very few are thought worthy of being grouped among the "scientific," there can no longer be any doubt in our minds as to our proper class and order. Mr. Gladstone, and a host of other nobodies, that some of us have been weak enough to look upon as worthy labourers in the cause of human knowledge, are of course in the large army so gracefully alluded to above. As for us poor amateurs

and gardeners and the myriads of workers in every branch not usually termed "scientific," we are beneath contempt of course. "Empirical blundering, speculating and guessing"! Mr. Smith leaves us no alternative but to suppose that this in his opinion is the method adopted by, say, to confine ourselves to work in our own way, the many gardeners and amateurs who have enriched the world by raising new varieties of fruits or vegetables, or those long-forgotten worthies who invented an art of such vast importance to humanity as that of grafting. We made no attempt to distinguish a gardener from a botanist on p. 135. We did not say that the "generality of gardeners" were perfectly conversant with plants in every way; we could not say this of any class of men. We did not say that "botanists generally" do nothing more than betray a taste for drying the plants the cultivator grows.

Mr. Smith must be well aware that the great majority of botanists do not rise beyond the technical details of their "science," and that this fault is very often laid at their doors by eminent scientific men. Such admirable investigations as those of Mr. Darwin are rarely attempted by them, so busy are they in applying technicalities. Not a few of the so-called scientific men who lecture on botany in London do not know the names of the very plants on the table before them. A few years ago we heard a lecturer before the Royal Botanic Society express himself as follows, with reference to the common Flax:—"The Flax," he began, "is a pretty blue flower; in fact, *all the Flaxes are blue*!" Of course, this merely proves that there are bad as well as good botanists. All who see a little below the surface in botany or any other branch of scientific work, know well that errors and false assumptions and baseless theories abundantly exist in it. We point out this to show that the labours of an intelligent experimental gardener, if not always so easy or so easily defined as those of a botanist, are more tangible, and that the botanist is as prone to error as the cultivator. We know botanists of whom nothing like the above could be said, and who, like Mr. Bentham, Dr. Hooker, and Asa Gray, have contributed valuable stores of knowledge to the world. We respect botanists as much as any other class of workers, but we cannot permit, without protest, any class of men to despise, by implication, if not directly, as Mr. Smith does, the work of others. We could say much more on the subject, but we prefer to offer Mr. Smith the following argument on it by one who is, in this and other countries, allowed to be one of the greatest of all thinkers, living or dead, and who, it need not be said, occupies a very high place among scientific men in this country.

HERBERT SPENCER ON "SCIENCE," AND KNOWLEDGE.

THERE has ever prevailed among men a vague notion that scientific knowledge differs in nature from ordinary knowledge. By the Greeks, with whom mathematics—literally *things learnt*—was alone considered as knowledge proper, the distinction must have been strongly felt; and it has ever since maintained itself in the general mind. Though, considering the contrast between the achievements of science and those of daily unmethodic thinking, it is not surprising that such a distinction has been assumed; yet it needs but to rise a little above the common point of view, to see that no such distinction can really exist; or that at best it is but a superficial distinction. The same faculties are employed in both cases; and in both cases their mode of operation is fundamentally the same. If we say that science is organised knowledge, we are met by the truth that all knowledge is organised in a greater or less degree—that the commonest actions of the household and the field presuppose facts colligated, inferences drawn, results expected; and that the general success of these actions proves the data by which they were guided to have been correctly put together. If, again, we say that science is prevision—is a seeing beforehand—is a knowing in what times, places, combinations, or sequences, specified phenomena will be found; we are yet obliged to confess that the definition includes much that is utterly foreign to science in its ordinary acceptation. For example, a child's knowledge of an Apple. This, as far as it goes, consists in previsions. When a child sees a certain form and colours, it knows that if it puts out its hand it will have certain impressions of resistance, and roundness, and smoothness; and if it bites, a certain taste. And manifestly its general acquaintance with surrounding objects is of like nature—is made up of facts concerning them, so grouped that any part of a group being perceived, the existence of the other facts included in it is foreseen.

If, once more, we say that science is *exact* prevision, we still fail to

establish the supposed difference. Not only do we find that much of what we call science is not exact, and that some of it, as physiology, can never become exact; but we find further, that many of the previsions constituting the common stock alike of wise and ignorant, *are* exact. That an unsupported body will fall; that a lighted candle will go out when immersed in water; that ice will melt when thrown on the fire—these, and many like predictions relating to the familiar properties of things, have as high a degree of accuracy as predictions are capable of. It is true that the results predicated are of a very general character; but it is none the less true that they are rigorously correct as far as they go; and this is all that is requisite to fulfil the definition. There is perfect accordance between the anticipated phenomena and the actual ones; and no more than this can be said of the highest achievements of the sciences specially characterised as exact.

Seeing thus that the assumed distinction between scientific knowledge and common knowledge is not logically justifiable; and yet feeling, as we must, that however impossible it may be to draw a line between them, the two are not practically identical; there arises the question—What is the relationship that exists between them? A partial answer to this question may be drawn from the illustrations just given. On reconsidering them, it will be observed that those portions of ordinary knowledge which are identical in character with scientific knowledge, comprehend only such combinations of phenomena as are directly cognizable by the senses, and are of simple, invariable nature. That the smoke from a fire which she is lighting will ascend, and that the fire will presently boil water, are previsions which the servant girl makes equally well with the most learned physicist; they are equally certain, equally exact with his; but they are previsions concerning phenomena in constant and direct relation—phenomena that follow visibly and immediately after their antecedents—phenomena of which the causation is neither remote nor obscure—phenomena which may be predicted by the simplest possible act of reasoning.

If now we pass to the previsions constituting what is commonly known as science—that an eclipse of the moon will happen at a specified time; and when a barometer is taken to the top of a mountain of known height, the mercurial column will descend a stated number of inches; that the poles of a galvanic battery immersed in water will give off, the one an inflammable and the other an inflaming gas, in definite ratio—we perceive that the relations involved are not of a kind habitually presented to our senses; that they depend, some of them, upon special combinations of causes, and that in some of them the connection between antecedents and consequents is established only by an elaborate series of inferences. The broad distinction, therefore, between the two orders of knowledge, is not in their nature, but in their remoteness from perception.

If we regard the cases in their most general aspect, we see that the labourer, who, on hearing certain notes in the adjacent hedge, can describe the particular form and colours of the bird making them, and the astronomer, who, having calculated a transit of Venus, can delineate the black spot entering on the sun's disk, as it will appear through the telescope, at a specified hour, do essentially the same thing. Each knows that on fulfilling the requisite conditions, he shall have a preconceived impression—that after a definite series of actions will come a group of sensations of a foreknown kind. The difference, then, is not in the fundamental character of the mental acts, or in the correctness of the previsions accompanied by them, but in the complexity of the processes required to achieve the previsions. Much of our commonest knowledge is, as far as it goes, rigorously precise. Science does not increase this precision, cannot transcend it. What then does it do? It reduces other knowledge to the same degree of precision. That certainty which direct perception gives us respecting coexistences and sequences of the simplest and most accessible kind, science gives us respecting coexistences and sequences, complex in their dependencies or inaccessible to immediate observation. In brief, regarded from this point of view, science may be called an *extension of the perceptions by means of reasoning*.

On further considering the matter, however, it will perhaps be felt that this definition does not express the whole fact—that inseparable as science may be from common knowledge, and completely as we may fill up the gap between the simplest previsions of the child and the most recondite ones of the natural philosopher, by interposing a series of previsions in which the complexity of reasoning involved is greater and greater, yet there is a difference between the two beyond that which is here described. And this is true. But the difference is still not such as enables us to draw the assumed line of demarcation. It is a difference not between common knowledge and scientific knowledge, but between the successive phases of science itself, or knowledge itself—whichever we choose to call it.

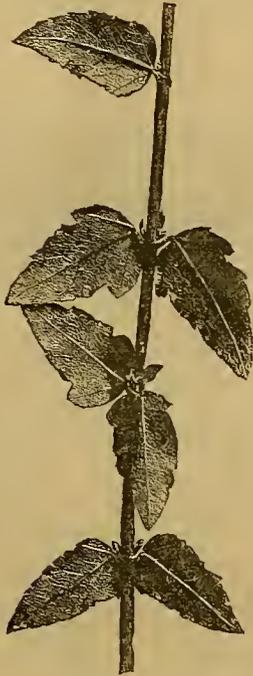
THE ARBORETUM.

HARDY TREES AND SHRUBS.

BY GEORGE GORDON, A.L.S.

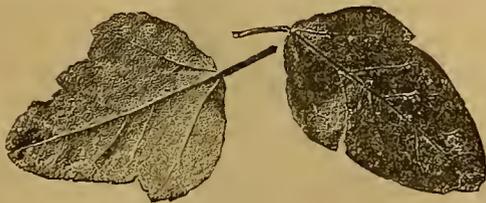
THE VARIOUS LEAVED MAPLE (*ACER HETEROPHYLLUM*).

THIS is the smallest of all the Maples, and when left to itself it forms a much-branched round-spreading evergreen bush, from 3 to 4 feet high, thickly furnished with rigid laterals and slender twig-like smooth shoots; but when trained to a single stem it forms a neat small tree-like plant from 6 to 10 feet high, with an ample round head. It is a native of the Levant, and is perfectly hardy; it was first introduced in 1759. The various-leaved Maple thrives well in any good garden soil, and is easily increased, either by means of



About half the usual size.

cuttings, layers, or by grafting it on the common field Maple; and on account of its slow growth, neat appearance, and being evergreen, it is a species well suited for planting as a single bush on grass in places of limited extent. The leaves are persistent and of various shapes and sizes, but mostly ovate-pointed, and either slightly three-lobed and furnished with a few visible serratures on the edges or entire. They are quite smooth on both surfaces and of a dark glossy green above, with those on the young shoots distantly placed



The largest sized leaves.

and nearly stalkless, while those arising from the older parts of the plant are on longish stalks and crowded together. The flowers are greenish-yellow, produced in loose corymbs, and appear in the end of May. The fruit or keys are small and smooth, with the wings parallel and lying close together. The synonyms are *Acer sempervirens* and *microphyllum*, and frequently *creticum*, but which last is a great mistake, as that kind forms a tree from 25 feet to 30 feet high; whereas the *Acer heterophyllum* is only a small bush, which seldom exceeds 3 feet or 4 feet in height, and with leaves not more than one-third the size.

VINES IN SHRUBBERY BORDERS.

THE race after novelty that has become so exciting in most departments of horticulture can hardly be said to have entered our shrubberies. We hear constantly the cry for new fruits and flowers, or flowers so old that their scarcity gives them the rank of novelties. But our shrubs continue very much as they were; the battle of the styles has hardly entered into their quiet precincts; they continue for the most part as lumpy and monotonous as ever; the same shrubs in the same form compounded of indiscriminate mixtures. Most shrubberies are, however, susceptible of great improvements. Fresh lines of greater beauty should be laid down for them. It makes nearly all the difference whether the light plays upon them and reveals their beauty, on sweet curves and graceful bends, or whether they are set up as stiff sentinels in straight lines, squares, or triangles. The habit of planting shrubs mostly on the flat should be abolished. Raised banks, rolling grounds and dells, give a totally new and far richer and more satisfying character to shrubberies. Skilful grouping is another thing wanted. The indiscriminate dotting style is intolerable. It succeeds in making all shrubberies alike, and equally tiresome. Grouping provides the means of endless variety. By varying the size, form, and relation of the groups to each other, interest and novelty might be sustained without flagging, over a hundred or a thousand acres.

Another means of creating novelty in shrubberies is the introduction of new material. I have one such novelty to propose now—the Grape vine. It is within easy reach of all, and would prove effective in a short time. I have already recommended that all spare walls, out-buildings, rocks, and similar features be draped with its leaves, and perhaps also with its clustering fruit. I now bring it forth as one of the most valuable plants for massing or mixing with other shrubs, for climbing the stems of trees, clothing rustic work, &c. A mixed group of vines yields about the finest mass of rich foliage that can be imagined. The variety of size, form, and colour is well nigh endless. The Parsley-leaved vine is one of the most beautiful for shrubbery decoration, and is seen to great advantage associated with the Syrian or toning down the fiery foliage of the Claret or Barbarossa. Miller's Burgundy, again, with its mealy coat, is fine in contrast with West's St. Peter's, and those that put on purple tints in the autumn. Black Hamburg, Alicante, Lady Downes, or indeed any of our hardier vines, are all available for these purposes. No fear need be entertained about their hardiness. If killed to the ground any year they will throw up plenty of summer shoots for shrubbery purposes; but as a rule they would not be injured, and close pruning would have to be the rule to keep them within bounds. The American varieties are many of them, I understand, still more ornamental, and might readily be introduced for shrubbery furnishing. Further, the Virginian Creeper agrees well with the vine in character and habit. It also colours as richly on the ground as on walls, and it might be allowed to intermix with the greener-leaved sorts of vines. As to the place for vines they would look rich in any part of the shrubbery, but best perhaps in sheltered positions and in the warm recesses formed by receding outlines. Generally they should perhaps be massed by themselves, yet a few of the brighter-leaved sorts would look well if scattered among and allowed to roam at their own sweet will among other shrubs of any sort.

D. T. FISII.

A Good Pair of Dissimilar Bushes.—On the lawn in front of Mr. Hannam's house at Bromstone, in the Isle of Thanet, there is a capital pair of handsome plants; one is a sweet Bay, the other a variegated Holly. Both are about 25 feet high, nearly round, and close down to the grass. I suspect that they must have been layered. The Holly seemed to be as far through as it was high, and the Bay was rather broader.—W. T. P.

Cytisus incarnatus.—This hardy shrub resembles *C. purpureus* in its leaves and general aspect, but is of much larger proportions. The flowers, which appear from April to June, are of a vinous rose-colour, and produce a fine effect in contrast with the dark green leaves. It may be multiplied by cuttings rooted under a cloche or bell-glass. It does not last long, or form a handsome subject, when grafted on *C. Laburnum*.

Alnus glutinosa laciniata.—Since writing to you a month ago (p. 197), about this beautiful tree, I have fallen in with another fine specimen of it. It is growing at Milton, near Canterbury, on the banks of the Stour, and its trunk is about the same distance from the stream as that of the tree on the bank of the Wandle, the roots in both cases finding their way doubtless into the water. This Kentish specimen is 48½ feet high, and 5 feet 9 inches round the bole, the spread of the branches being nearly equal to the height of the tree.—W. T. P.

THE PROPAGATOR.

THE ART OF GRAFTING.

(Continued from p. 263.)

GROUP 6.—MIXED GRAFTING.

We give this name to those modes of grafting which, without having any determinate character, resemble other methods either in the manner of preparing the scion, or uniting it with the stock. Such are cutting-grafting, root-grafting, and grafting with fruit-buds.

CUTTING-GRAFTING.—In order to propagate various kinds of trees or shrubs, which succeed as cuttings and not so well when grafted in the ordinary way, we have recourse to a mixed process, the base of which is the employment of a scion or a stock in the condition of a cutting. The new roots which spring from the cutting strengthen the graft by supplying it with additional vital elements. It is, so to speak, half grafting by approach, and often a case of root-grafting. Sometimes the scion is the cutting and sometimes the stock, and occasionally both are cuttings united by grafting. Adept in grafting, they say, should succeed in grafting a scion of Orange-tree on the midrib of a leaf of a Citron-tree which has been newly slipped!

GRAFTING WITH THE SCION A CUTTING.—In this method the scion only is a cutting, the stock is a tree which has been at least a year planted. It may be left entire or headed down at the time of grafting: and may be grafted either close to the ground or at some distance from it, under the surface of the soil or above it.

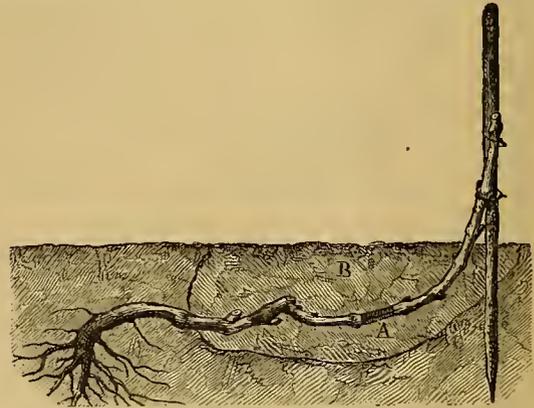
CUTTING-GRAFTING ON A LOW STEM.—There are two principal methods based on the previous amputation of the stem or



Cutting-Grafting.

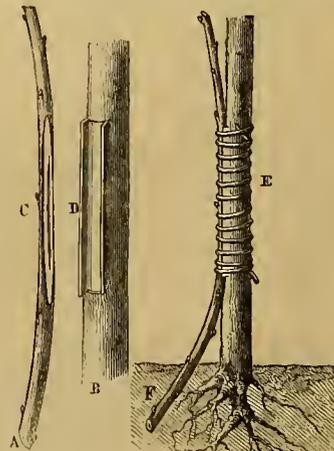
otherwise. Here the stock is shortened to within 4 inches or 8 inches from the neck. We then take a scion-branch of sufficient length that when its extremity is buried in the soil as a cutting, close to the stock, it may be grafted on the stock, and have a couple of buds above the graft. The stock is channelled with the gauge and the bark is removed from that part of the scion which is to be placed in the groove. They are then bandaged and covered with mastic. When a vine is grafted in this way, the soil is heaped up about it so as to cover the graft. When the stem of the vine is young, or if it is furnished with vigorous shoots at the base, we have recourse to *layer grafting*. A small trench or hole is made at (B), in which the shoot is to be layered; the shoot to be grafted is then cut down to the third

eye (as at A). The other shoots of the same stock are removed, or cut short or grafted in the same way. The scion is grafted at A in the English fashion, then cut so as to leave two or three eyes over-ground, and fastened to a stake. Should the stock offer any resistance it can be pegged down in the bottom of the trench with a forked stick, the hole or trench (B) should then be filled with good free soil, which will facilitate the production of the new roots. Instead of previously shortening the stock it may be grafted entire, so that it may not be mutilated to no purpose, should the graft miss. The scion (A) is cut as at c:



Layer-Grafting.

the stock (B) is prepared to receive it by making three incisions in and raising the bark (as at D). The two parts are then brought together (as at E) in the same way as in grafting by approach; the scion having its base (F) buried, in order to form roots, or merely for the purpose of keeping it alive. The graft is bandaged and covered with mastic, or grafting wax. When the operation is performed in spring the upper part of the stock is to be gradually removed in the course of the same year. We begin to do this in a week after grafting by cutting away some of the branches, and repeat the operation at intervals during the summer, in proportion as we see the shoots of the

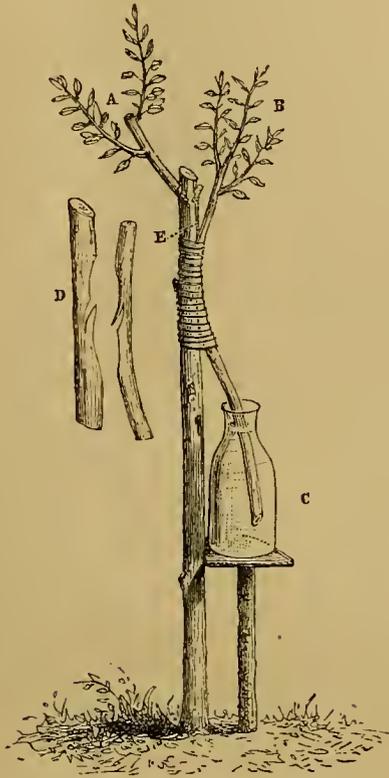


Layer-Grafting (another method).

graft develop themselves. The process is finally completed by the removal of the stump in the following year. If the separation of the lower part of the scion from the ground can be dispensed with, its chances of a lengthened existence will be doubled. If it is necessary, however, it is best accomplished gradually by successive annular incisions which will by degrees accustom it to draw its sustenance entirely from the stock.

CUTTING-GRAFTING ON A TALL STOCK.—If the scion is not long enough to be at the same time planted as a cutting and grafted at a certain height on the stock, we make good the deficiency by using a vessel filled with earth or a bottle of water raised to the required height and receiving the lower part of the scion. Cool sand is much better for this purpose than vegetable mould,

as it is not so liable to become dry. Should the grafting take place during the period of vegetation, while the sap is flowing, we should prefer using a vessel of water (c) at the bottom of which should be a layer of powdered charcoal, in order to prevent the decomposition of the water, which otherwise must be renewed frequently. The scion (B) should be stripped of its leaves; in the case of deciduous subjects these should be cut off close to the stalk, in evergreens it will be sufficient to cut the half of each leaf away. The graft, which is made either by veneering or in the English fashion, should be covered with



Cutting-Grafting on a tall Stock.

grafting-clay, and shaded with paper. The removal of the upper part of the stock, which is begun in summer by gradually cutting away the branches (A) and the top of the main stem, should not be completed (as at E) until after the growth of the year following. At the same time the heel of the scion should be cut away level at its junction with the stock, the office of the auxiliary sand or water having now ended.—C. Bullct.

(To be continued.)

GARDENING ROUND LONDON.

(DURING THE PRESENT WEEK.)

BY OUR SPECIAL REPORTER.
PRIVATE GARDENS.

The Flower Garden.—Now, when trees begin to put on the "sere and yellow leaf," and when we have frosts at night and rain by day, as has been the case during the past week, we must naturally expect diminished beauty in our flower gardens. The tops of Dahlias have, in many cases, suffered from the prematurely severe weather which we are experiencing. The whole of the plants, however, cannot yet well be spared; the decayed parts are, therefore, removed, in order to preserve as much beauty as possible a little longer. Heliotropes, Perilla, and a few other tender plants have also suffered, yet in some sheltered gardens they have escaped unhurt. The finer kinds of Geraniums are being lifted from the flower beds, potted, and placed in frames, where they will get established before the winter. For these good sandy loam is preferable to richer material for wintering them in, and, if necessary, they can be repotted into richer soil in spring. Cuttings of Geraniums, Centaureas,

Coleuses, Alternantheras, &c., are being taken off and struck in frames very gently heated. Verbenas are still being struck in a brisk bottom heat, and as soon as they have fairly taken root they are gradually removed to cooler quarters. Although they are best struck in July, it is not an easy matter to obtain a sufficient stock so early without spoiling the appearance of the beds, hence the necessity of late propagation in heat. Some of the finer kinds of Lobelias are being lifted and potted, at the same time cutting them over to within two or three inches of the root; these plants, after being carefully wintered, afford great numbers of cuttings in spring. Those used for conservatory decoration in summer are also similarly treated. Plants of *Euonymus radicans variegatus* are lifted and divided into as many parts as will make plants, and are planted in frames in lines 6 inches apart and 2 inches plant from plant. Cuttings of variegated Thyme are also being struck in gentle heat; those that are rooted are transplanted thickly into pans, which are for a time kept rather close in frames, but after a week or two they are freely exposed. Seeds are being gathered as they ripen of *Tropæolum canariense*, *Nasturtiums*, *Antirrhinums*, *Mignonette*, and other bedding plants, and also of ornamental annuals.

Conservatories.—Camellias grown in borders have invariably set their flower-buds satisfactorily this season, and many of them are beginning to produce a second growth. These young shoots, however, are all removed as they appear, for if left they would be injurious to the plants, and would probably die during the winter. Pot plants being more under command than those in borders are not so apt to produce second growths. *Daturas* are now loaded with their large trumpet-shaped blooms. Roses trained as climbers have the points of the long shoots cut off, and are trained in such a manner as not to obstruct light, or appear too stiff. *Madame Falcot*, *Gloire de Dijon*, *Souvenir de la Malmaison*, and a few others still furnish a few blooms. *Azaleas* that have set their flowers well have the young shoots neatly tied up. Any Heaths showing signs of mildew are dusted over with flowers of sulphur. Many of the young central shoots are removed, for if allowed to remain they are only a productive source of mildew, and that often unnoticed except upon close examination. Heaths, *Hedaras*, *Dillwynias*, *Chorozemas*, &c., are being housed, but still they enjoy a free circulation of air. The Pampas Grass, generally a fine outdoor plant, is nevertheless valuable for conservatory decoration. For this purpose young plants are kept in pots, plunged out of doors throughout the summer, and are taken indoors about this season, just as they throw up their flower-spikes. Coleuses for keeping through the winter are kept in small pots, and in airy houses, where they get well hardened, and consequently stand the winter better. In spring, after being repotted and plunged in bottom heat, they yield abundance of cuttings. Some, however, strike cuttings in August and September, to stand the winter, and afford an additional supply in spring. Plants of *Solanum Capsicastrum* are being removed from the open air, where they have been plunged in beds, and are either placed in frames or taken at once into the conservatory. Lily of the Valley roots are being lifted and potted for early forcing. *Mignonette* sown in 6-inch pots for winter flowering are thinned out a little as they come up. Some are sown in 4-inch pots, and after the plants attain a height of about 4 inches the whole potful is shifted into a 6-inch pot without breaking the ball. Lilliums that have done flowering are laid on their sides out of doors, so as to prevent the soil from becoming saturated with water. *Clerodendron Kämpferi* is being dried off gradually in a cool house or out of doors.

Stoves.—The cold and damp weather of the past few days have necessitated a less supply of air and water to the inmates of stoves. Any syringing that is given is done either late in the forenoon or early in the afternoon. Some plants, especially Orchids, that have been too liberally supplied with water during the growing season, now that the quantity is being lessened, have commenced to grow afresh; consequently, such plants are kept in the warmest part of the house, and the temperature and amount of moisture are gradually decreased; but even in mid-winter they will not be kept quite dry, for it is necessary to preserve the young shoots uninjured. *Achimenes* and *Gloxinias* receive similar treatment; some of the latter that have been dried off for some time are stored one above the other in some place where water cannot get at them nor the temperature be likely to fall below 45° in winter. *Allamandas* are still in good condition, but it is necessary to diminish the supply of water, so as to have the plants in good condition to stand the winter. *Bougainvilleas*, *Dipladenias*, &c., are likewise dealt with in the same manner. Some *Poinsettias* are being repotted and plunged in a gentle bottom heat, and others are set on shelves in the stove or propagating pit. Plants of *Euphorbia jacquiniæflora* are also repotted, staked, and plunged in bottom heat. Cleaning the leaves of the several evergreen stove plants with water in which soft soap has been dissolved is now occupying attention.

Forcing Department.—In the case of freshly made Mushroom beds, as soon as the temperature falls to 75° or 80°, they should be spawned, and those previously spawned should be covered with a layer of straw; such covering must not, however, be allowed to increase the temperature, which in the case of beds in bearing should not exceed from 55° to 60°, and this is maintained by an increase or decrease of the covering, as the case may be. French Beans in pots that are now coming into flower are earthed up, and are syringed every day; another sowing is made in pots in cold frames. Summer planted Cucumbers are now being cleared out. The earliest of the winter ones are producing their first fruits, and the plants in the second house are showing flower. Melons are mostly all out, but a few still remain unripe. In the house containing these a brisk fire heat is maintained, and air freely admitted; no more water is given to the roots than can possibly be helped. Pines are being placed in their winter quarters. Some are turned out of pots and planted in a frame fully 2 feet apart each way. Others planted thickly are being lifted and transplanted further apart. The frames containing these are either heated by means of fermenting material, hot-water pipes, or hot-water tanks, and have linings of fermenting manure around the outside. The wood of Vines in the earliest vineries being now quite ripe the vineries are left open night and day. In the case of Vines in a young state a little fire-heat is kept on night and day, and a little air at the same time to ripen more thoroughly the wood.

Hardy Fruit and Kitchen Garden.—Orchard rubbish of all kinds is collected into a heap and burned. Some Pears and Apples yet remain on the trees, but these will be carefully gathered in dry weather as they become fit. Strawberry plantations are still being made, using the strongest runners for the purpose. To meet any emergency that may occur during winter, some hundreds of prepared runners are planted thickly in lines six inches apart. Cabbages are being planted largely for spring use. Cauliflowers sown last month are being pricked out where they can be protected in winter. Spinach sown broadcast is being thinned out a little, whilst that sown in lines has the hoe run between the rows. Onions are now stored; some are laid on the floors or shelves of fruit rooms, some in sheds, and some tie them up in bundles and suspend them on nails or stakes around the sheds or other storehouses. Celery is earthed up when the soil is dry; as are also Caradoons. Of Radishes a small crop has just been sown, and the last sowing thinned a little. Endive is being planted out for succession on warm borders or ridges. Of the earlier plantings, some plants are being tied up, and others covered to blanch. To the roots of Leeks a little earth is being drawn. Parsley is being cut over, so that a young supply of leaves may be produced before winter. Seedlings from the summer's sowing are being lifted and transplanted as edgings for quarters of the kitchen garden.

NURSERIES.

Indoor Department.—The principal work in this department is the housing of Heaths and New Holland plants that have been out of doors throughout the summer. Houses have been prepared for their reception by clearing them of the pot Vines that were kept in them to produce and mature their young growths. Young Caladiums in pots are laid on their sides to dry. Chinese Primulas are being repotted, and set in cool pits that are kept rather close for a few days. Some Cape Pelargoniums are being repotted and started into growth. Poinsettias and Euphorbia jacquiniiflora are being pushed on vigorously. Clematises are being grafted on *C. Flammula*, and placed in frames inside a gently-heated pit, and kept closely shaded. Plants of these from cuttings that are well rooted are being potted into 60-sized pots, and those that were potted about two months ago get another shift into 48-sized pots. The young shoots are tied to small stakes, and those of the older plants neatly fastened to trellises. Conifers are being propagated in large quantities, both by means of cuttings and grafting. All are kept in close frames, set also under glass, a thick shading being kept over them throughout the day. They are inserted thickly in 4-inch pots, which are plunged in cocoa-nut fibre. Grafting of Conifers is mostly confined to the finer kinds, such as the *Retinosporas*, variegated Yews, Cypressess, Thujas, &c., all of which are worked on the strong-growing common sorts in pots. The grafted plants are placed thickly in the frames, and laid almost flat on their sides. Here they will remain until next year, when, if the scion is found to be firmly united, the crown of the stock is removed. Until the scion has fairly taken, no portion whatever of the stock is cut away, unless it be such portions as are in the way of the graft. The finer hybrid Rhododendrons are also being treated in a similar manner, *R. ponticum* being used as a stock. Two and three year old seedling Rhododendrons are being potted from beds in the open air into four and six-inch pots, and placed in frames for grafting on next season. Suckers and slips from Yuccas, growing

in the open ground, are potted singly and placed in frames. *Ampelopsis Veitchii*, an improvement on the old Virginian Creeper, is being largely increased by means of cuttings in close frames. Some of the Japanese Maples are being inarched. Well rooted cuttings of *Enrya latifolia* are being potted into 48-sized pots and set in a cool house. Some of the green-leaved *Aucubas* in pots are kept indoors to ripen their berries earlier. Tea and Bourbon Roses in pots are arranged in good positions in airy houses; the Hybrid Perpetuals are plunged in the open border.

Outdoor Department.—Fruit tree training is still receiving attention. From this year's budded Rose stocks the shoots are cut off to within a foot or a foot and a half of the bud. Rhododendrons sown last spring have formed their second leaves, and have been protected from the sun and rough weather by a thick covering of Birch twigs laid over the beds, supported on cross stakes, so as to raise them about 6 inches above the surface. These will remain undisturbed in the beds for another year, but during the winter they will have a thicker covering to protect them from frost. Those sown a year ago last spring, are now being lifted and transplanted into other beds in lines 6 inches apart, and 3 or 4 inches plant from plant. Beds specially prepared for them have a considerable quantity of peat mixed with the ordinary soil. In these beds the transplanted seedlings are allowed to remain for another year or two, protected a little in winter. Older plants of named kinds are being layered, strong wooden pegs being used in the operation, and some peaty soil to place around the incision. Hardy Azaleas are also being layered in a similar manner. *Aucuba*, Portugal and Common Laurel, Bays, Privet, Holly, Box, Yews, &c., cuttings struck last spring and the previous autumn in sheltered borders, have the handlights which protected them completely removed now, but they are kept at hand to be replaced in the event of frosty weather. Nicely rooted cuttings of all kinds of Laurels are being transplanted in the open ground in lines 6 inches apart. *Aucubas* and *Holbies* are also being similarly treated. After transplanting the ground gets a thorough soaking with water, and to save the plants from the sun, some dried Fern is scattered over them in the daytime, but it is removed in dull weather. Strong young plants of fine kinds of Conifers are also being transplanted from 60-sized pots into 6 feet wide beds. Ivy cuttings are taken off and inserted in little bundles in the ground, until time is found to line them in properly. Cuttings of hardy Heaths are being inserted thickly in sheltered and well prepared borders, consisting of a peaty compost and silver sand, in patches of such size as can be covered with handlights. *Deutzias* have been plunged out of doors for some time in a slight hotbed, in order to get them into a good flowering condition, and certain kinds of Roses are treated in the same way.

MARKET GARDENS.

The rains which we have lately had have been of great benefit to market gardeners, who have been enabled to get out the Cabbage and other crops into ground previously manured and turned over either by the spade or plough, and marked off into lines 12, 15, or 18 inches apart. Onions left out when the rain came on are being taken in and dried in sheds. As the ground becomes completely cleaned it gets a good coating of manure, and is generally ploughed. The manure is spread on the surface, and, as the plough proceeds, women come after it filling it into the drill to be covered during the next journey, and so on till the whole is finished. In some cases, however, the spade is used in preference to the plough, especially where the ground has to be worked deeper than ordinary. The space between rows of Savoys and Broccoli, if not wholly covered by the leaves of these crops, is stirred by means of a grubber, which performs the work quicker than the hand hoe. Lettuces are put in between the lines of Strawberries planted this summer, and also between those of last year's planting. Old Strawberry plantations have the runners separated from the crowns with the spade, but time has not yet been found to remove the runners from between the rows. Vegetable Marrows, though injured by frost, are still brought to market by the waggon load. Some have already cleared them away, thrown out the manure placed under them, and scattered it over the ground, which has been dug and planted afresh. Runner Beans in some cases have suffered a little from frost, and now the pods are being collected as fast as possible. Celery is earthed up in dry weather.

LEAF FALL.

FALL—they fall around;
Fall, on the reddening ground;
Fall, as we fall away from life's sore tree,
Into the ocean of eternity—
Lost, swallowed up, and drowned.

THE GARDEN.

“This is an art

Which does mend nature: change it rather: but
THE ART ITSELF IS NATURE.”—*Shakespeare.*

BEDDING OUT.

A DEFENCE AND A REPLY.

(Continued from p. 266.)

As was pointed out last week in discussing the subject of bedding-out and its influence on our gardens, it is simply begging the question to hold that the case lies between the old mixed border and the bedding system. And here it may be well to enumerate some phases of gardening which are now as a rule totally neglected, but which are each far more important than the mixed border, beautiful as that undoubtedly may be made in the hands of tasteful amateurs with good collections of plants, such as the Rev. Mr. Crewe and the Rev. Mr. Ellacombe. And first of all there is the question of

TREE-PICTURES.

This is wide of the subject, some may say. Not so. The great labour and expense devoted to bedding-out in the majority of gardens makes it clearly impossible that anything like sufficient attention can be paid to the nobler kinds of permanent gardening, so to speak. It is necessary always to bear in mind that the expense for bedding-out is an annual one, for the production of effects that annually perish. In the small garden of an amateur, where half-a-dozen beds are devoted to bedding-out, the evil effect of this is not so clearly seen as in those famous places gorgeous with many thousand bedding plants and in the many thousand gardens that imitate them. In such gardens the immense attention paid to this fleeting bedding-out entirely prevents any due attention to planting in its noblest aspects. Conifers happening to be popular they are dotted about here and there in most places. There all ambition in the planting way seems to cease. It is not only possible, but easy to make charming flower-gardens of trees, but nobody ever attempts it, and flowering trees are neglected and rarely grouped in a pleasing and effective manner. It would be equally easy to form brilliant gardens of trees having richly coloured leaves in autumn, but now we can only see representations of these in pictures. The glory of the organic world, the stately trees that throw a veil of beauty over the hills and valleys of the otherwise desolate looking earth, which burst in every branchlet into rapturous bloom in spring, which pass off in autumn (especially in the case of the trees of North America—quite hardy with us) into the most vividly beautiful clouds of colour, and which vary so wonderfully in form, are thought of less importance than the materials with which we produce our transient carpet-gardens. Nay, they are thought of no importance at all. It is well known to those who visit many of the best gardens of England, that an attempt is rarely made to express in an artistic manner the beauty of the magnificent materials above alluded to. And it cannot be otherwise so long as the gardener's main object is the refurnishing of his long ribbon-borders and wide-spreading “carpets” of colour. As to the mixed herbaceous border itself, though it may be made very beautiful, it is by no means so desirable as various other ways of growing hardy plants. There is, for example, the

ROCK-GARDEN.

Not, however, the ridiculous object called a rockery by which so many gardens are disfigured, but a picturesque home for many types of vegetation that cannot be otherwise seen to advantage. A picturesque rock-garden, developed, so to speak, out of the natural rock, as at Cragside, or Glen Andred, or made artificially, by Mr. Pulham, in his happy manner, as at Berry Hill or Oak Lodge, is surely worth a year of the attention devoted to “Bedding out”! The hole-and-corner “rockery” is an eyesore on which one cannot even grow a few plants; the properly made rock-garden is the queen of gardens, and chiefly because of the immense variety of beauty that one may develop on it—not merely Alpine plants proper, Ferns,

&c., but the mountain shrubs and the host of climbers and trailers, including the new Clematises, which are seen to greater advantage in a well-made rock-garden than in any other way. And in the rock-garden there is nothing whatever of the “untidiness,” the “staking,” &c., which Mr. Peach deprecates so much. Every particle of surface may be mossed over with the vivid fresh green of the mossy Saxifrages in winter, or made silvery with the numerous high mountain plants that assume that tone; no garden presents a faultless inoffensive aspect throughout the year but the rock-garden. My argument must, I fear, suffer from the peurile notion of a rock-garden that exists in the public mind, but any one who visits a real rock-garden (say such as Sir W. Armstrong's, at Cragside, Mr. Wright's, at Osmaston Manor, or Mr. Backhouse's, at York) and sees how effective it is as a mere garden ornament in the distance, and what a precious open-air conservatory it forms for almost every type of vegetation dear to plant lovers, will certainly agree that to secure one well deserves the sacrifice of some of the attention now so freely given to the idol “Bedding out.”

SHRUB GROUPING AND CULTURE.

When more enlightened gardening days shall have dawned upon us, there are few ways in which the errors of the past will be more apparent than in that of hardy flowering shrubs. These are to the flowering trees what the Alpine flowers are to the larger perennials, and they abound in every high valley, slope, or mountain in temperate and cold countries, flowering more beautifully and freely than the trees. In our gardens, when a few kinds are grown, they are mostly “stuck in” under large subjects in a plantation, and there left to dwindle, or to be killed by the grosser things near them; any attempt at grouping or growing them properly, or collecting them for these purposes, is rarely or never made. Our precious system of throwing nearly everything we have to plant into the embrace of the plantations or shrubberies, or whatever they may be called, has driven many of the finest kinds either out of cultivation or into such obscurity that they are virtually so. And what should we do with these? Grow and group them so that their beauty will be as evident and as perfect as that of the finest tender exotic ever staged at an exhibition. Did Mr. Baines or Mrs. Lawrence ever show anything lovelier from their stoves or greenhouses than *Spiræa Lindleyana*, *Ononis fruticosa*, or *Stuartia pentagyna*, each equally well grown? And surely we must not say that it is because these and like subjects require no house to live in, and no never-ending expensive attendance, we do not cultivate them or place them better than so many common Quicks! Mr. Peach will probably agree with me that this as yet undeveloped branch of gardening deserves at least as much attention as the mixed border, and that some of the means now wasted so recklessly on fugacious decoration might well be devoted to expressing on our lawns, in the pleasure-ground, and flower-garden, conservatories of the world's shrub-beauty.

BETTER MODES THAN THE “MIXED BORDER.”

And now of our friends of the mixed border—the great stores of noble hardy plants, from Lilies to Pæonies, numbering (including species and varieties, and not including one weedy or doubtful plant) more than 2,000 distinct kinds of plants. Can we do nothing better with these than cram them into the “mixed border,” which Mr. Peach fancies is the only alternative for the bedding system? If not, we deserve to be condemned never to see a higher beauty in the vegetable kingdom than that afforded by a ribbon border! We will try. Why should we not group these as well as trees and shrubs in happily chosen spots on the turf? Pampas and Lily and Yucca lend themselves to artistic treatment of this kind, as well as the Weeping Willow or Lawson's Cypress. A new and charming group of the finest kinds would, if properly disposed and planted at first, go on improving for years. To the intelligent gardener one of the most agreeable labours would be the planting of a new group with new materials each year. And as to beds, could we not have any number of such as the following? “In the centre of a circular bed place a healthy good young plant of *Yucca gloriosa*, and around it a ring of *Yucca*

filamentosa and *Y. flaccida* mixed. These two kinds flower regularly and well. Among them insert a few roots of *Gladiolus* in early summer; they will add very much to the effect of the white flowers of the *Yuccas*. Around the *Yuccas* place a ring of *Iberis correaefolia*, and around that a ring of that capital little spring plant, *Erica carnea*. Finally, put a little cushion of the beautiful *Aubrietia purpurea* all round the *Erica carnea*. If there be a few Crimean or common Snowdrops, or *Scilla bifolia* to spare, drop them here and there between the *Erica* and the *Aubrietia*." This is one of many types of beds for hardy flowers admirably effective seen by themselves; then we may isolate the finer species, as Mr. Roger did with tender plants during the past summer in Battersea. To follow this plan is necessary wherever great variety and the highest beauty are desired in the garden, and among the very best materials for it are many of the finer perennials. Nothing, for instance, can look better than a well-developed tuft of the broad-leaved *Acanthus latifolius*, springing from the turf; and the same is true of the *Yuccas*, *Tritomas*, and other things of like character and hardiness. We may make interesting groups of one family, as the hardiest *Yuccas*; or splendid groups of one species like the Pampas Grass—not by any means repeating the individual, for there are now a good many desirable varieties of this noble plant.

It would be easy, did space permit, to point out numerous other directions in which equally practicable and desirable improvements might be made. It is hoped, however, that enough has been said to show that the subject has many more important bearings than either the "mixed border" or "bedding-out."

(To be continued.)

NOTES OF THE WEEK.

— *OPUNTIA RAFINESQUII* has flowered in the open air this season with Mr. Harrison Weir, in Kent, for the fourth year in succession.

— IN India the milk of the Cocoa-nut is used as a substitute for cod-liver oil in cases of debility and incipient phthisis, and in tea and coffee, in the place of ordinary milk.

— NOTWITHSTANDING the unfavourable weather of the past summer, the Castor-oil plants are now (the first days in October) in fine health and vigour on the cold clayey soil of the Regent's Park. The plants are from 6 to 10 feet high.

— WE were pleased to observe the other day, among a batch of plants received from the Alps by two of our metropolitan nurserymen, the beautiful Bavarian Gentian (*G. bavatica*), which has flowers of as fine a blue as those of *G. verna*. The plants in question arrived in a strong and healthy condition; therefore we may here soon to see this at present rare species more common amongst us.

— ONE of the best hardy perennials in bloom at the present time is the late-flowering *Pyrethrum* (*P. serotinum*), which is producing masses of large pure white Ox-eye Daisy-like flowers, with yellow discs. It may be seen in nearly all nurseries that contain hardy plants; also in the botanic gardens round London, and occasionally it may be met with in shrubberies in private gardens, positions in which it is both useful and ornamental, as it is a tall and vigorous grower, and a very free bloomer.

— WE have on several occasions directed attention to the curled-leaved Mallow (*Malva crispa*) as a valuable plant for shrubberies and other positions in gardens. Finer specimens of this plant than we ever remember to have seen before are now growing in Messrs. Osborn's Nursery, at Fulham. These plants are from 5 feet to 7 feet high, with stout stems perfectly covered with finely curled foliage from the base to the summit, many of the leaves being about a foot in diameter.

— IT is pretty generally known that the Coral tree (*Erythrina Crista-galli*) thrives and blooms vigorously in the open air in the southern parts of England; there are a good many gardens near London in which it is a fine autumnal ornament. It is usually planted at the foot of a wall on the sunny side, and the root protected in winter with a little litter. The other day we saw several fine examples of it in Mr. Bohn's garden at Twickenham, the most remarkable being one on the north side of a wall. It was in fresh young bloom after the plants on the south side had passed out of flower, and the most striking object in the garden the first week in October.

— SIR WALTER and Lady James have offered the people of Jarrow about five acres of land for a recreation ground, which, to the mining population of that district, will be a real boon.

— A FRUIT of *Gunnera scabra* recently grown in the open air at Brest measured more than 6 feet in circumference, and weighed over 29 lbs. Some of the leaves of this plant were more than 6½ feet long.

— AT the Wellington Road Nurseries the Guernsey Lily (*Nerine sarniensis*) is now flowering simultaneously and side by side with the Belladonna Lily, in an open border, and in this position it is blooming much freer than it often does when grown in pots indoors.

— MM. CHARLES HUBER & Co. have disposed of their well-known establishment at Hyères, and opened a new nursery at Nice. The superior climate of the latter, and the advantages which it affords for the culture of special subjects, are the reasons assigned for the change.

— ON the 10th January, 1878, the centenary of the death of Linnæus will be commemorated at Stockholm, on which occasion a statue of the Father of Botany will be unveiled. The coming fête is already regarded with much enthusiasm in the Swedish capital, and photographs of Linnæus's study, his portrait, and the *Linnæa borealis* are selling freely.

— TWO of the finest hardy bulbs in flower at the present time are *Crocus nudiflorus*, which has large and handsome pale purple flowers, and *Sternbergia lutea*, the blossoms of which are of a clear yellow colour. Masses of the former may be seen in several of the metropolitan nurseries, while a large bed of the latter is in great beauty in the Fulham Nursery.

— AT Malaga, a specimen of the Pawpaw tree (*Carica Papaya*) has fruited for the last three years in the open air. The fruit, unfortunately, have been blown down by the wind every year before they were quite ripe. M. Geoffre (gardener to Don Tomas Heredia) thinks he will be able to prevent this occurring in future by planting the tree in a more sheltered position. The tree alluded to has grown over 26 feet high, and is 32 inches in diameter at the base.

— THE accounts relating to the late show of the Royal Horticultural Society in the Lower Grounds, Aston, are in a sufficiently forward state to show something like what the net profit was, and Mr. Quilter has determined to redeem his promise to "give half his share of the profits to the charities of Birmingham," by distributing £500 amongst them. We understand that Mr. Quilter intends to limit his generous gift to the "medical" charities.

— OUR horticultural friends in France appear to be somewhat puzzled to understand the meaning of the term Lilliputian as applied by us to Dahlias, &c. Their previous conceptions having led them to suppose that the word was identical in meaning with "dwarf," they were greatly amazed to find that the Lilliputian Dahlias were by no means dwarfish plants. A writer in the *Revue Horticole* has been at some pains to explain that the term is applied, not to the plants, but to the flowers.

— BEFORE the departure of the Prince and Princess of Wales the other day from Blair Castle, the seat of the Duke and Duchess of Athole, they planted two trees in the grounds to commemorate their visit. It may be mentioned that, in the immediate vicinity of the castle there are several commemorative trees. One was planted by the Queen in 1844, another by the late Prince Consort, a third by the Duchess of Kent, and only a few weeks ago two were planted by the ex-Empress Eugénie and the Prince Imperial.

— ON the 30th of next March a grand International Horticultural Exhibition will be opened at Gand. The programme has been already issued, and we learn that the prizes will consist of 754 medals. Of these 61 are of gold, 167 of silver-gilt, and 526 of silver. A special gold medal of the first-class will be given for the best collection of fruit trees of all kinds, and another worth £20 for the best sixty Azaleas in flower.

— IT is not surprising, says the *Pall Mall*, that the conduct of those who, during the late autumn manoeuvres, amused themselves by carving their names at Stonehenge has met with severe reprehension, and it is well worth consideration whether the names thus inscribed should not be publicly advertised, that the world may know more of those persons who are so anxious to bequeath their fame to posterity. Probably this course would do more than any remonstrance to check the irresistible inclination displayed by British tourists to disfigure everything they can lay their hands on. Perhaps the erection of a dummy stone on which to carve names would give general satisfaction, and to a great extent protect the sublime from being defaced by the ridiculous.

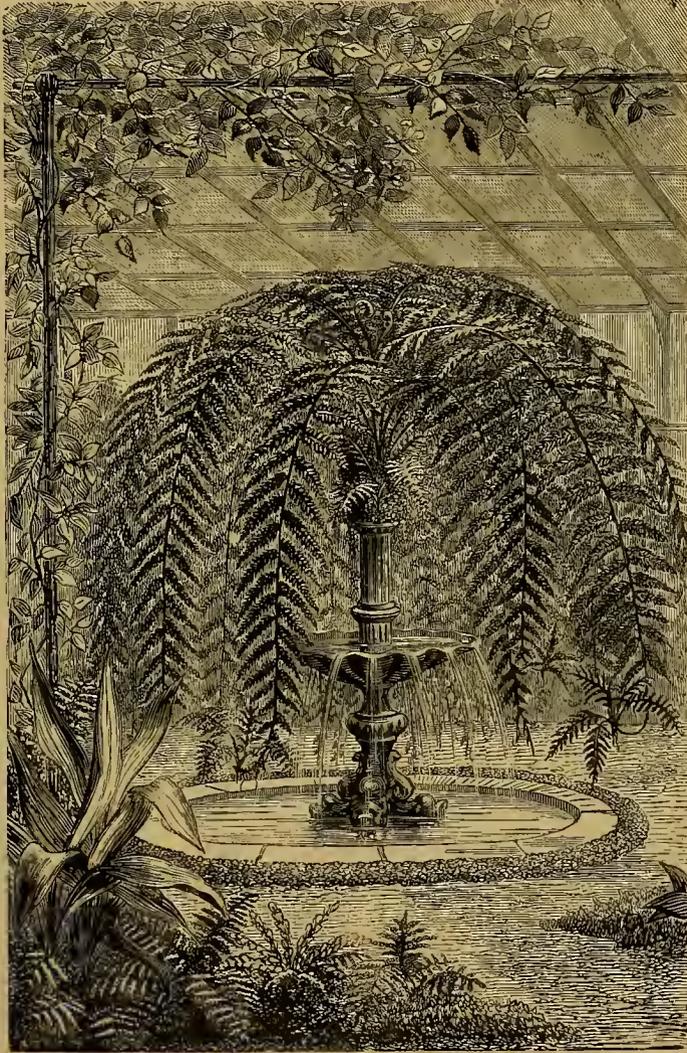
THE INDOOR GARDEN.

THE WOODWARDIAS.

AMONG the many kinds of Ferns cultivated in our gardens, few are more ornamental than the Woodwardias, and of these *W. radicans*, the subject of our illustration, is one of the handsomest. It is well adapted for conservatory decoration, especially as a centre piece for a vase, on account of the broad graceful arched manner in which the fronds grow, and in baskets or on projecting peaks of rockwork it is also equally pleasing. The fronds, as may be seen, are viviparous at the points, a circumstance of which advantage is taken when young plants are wanted. All that is necessary is to take a frond that is furnished with a number of these embryo plants and to lay it on the surface of a broad seed pan filled with peat and sand in about equal proportions. Peg down the frond quite flat on the mould, keeping the upper surface still upwards, and sprinkle a little silver sand over the whole. Do not, however, bury the frond, but on the contrary, let the sand just nestle about the axils of the pinnæ and the base of each young bud. The whole must be kept moderately moist and the young plants will strike root. Some sever the fronds from the parent when about to propagate in this way; but the surest plan is to allow them to remain till the young plants have struck root. A close frame or gently heated pit is the best place in which to strike plants in this way, and as soon as the young plants have become established, with a sharp knife cut the frond into several pieces, and after a week or two cut it again into as many pieces as there are plants, preserving to each only a very small portion of frond. After this allow the plants to remain some days longer undisturbed; then lift them out carefully one by one, pot them singly into thumb or small sixty-sized pots, according to their size and strength, and treat them as you would young Ferns raised from seed. Another species quite as useful as *W. radicans* is *W. orientalis*—a charming Fern for cool conservatory decoration, and having fronds of a somewhat paler shade of green than those of *radicans*. Both kinds are hardy in the south of England; but when afforded the shelter of glass, their growth is much more satisfactory. In a cool Fernery the fronds of *W. radicans* not unfrequently acquire a length of eight or ten feet. Those of *orientalis* are rather shorter, and bear on the upper surface a profusion of little bulbiform plants. Woodwardias like a loamy soil, and, as a rule, succeed best when they are planted out. For furnishing bare corners of houses or indoor vases

in winter, nothing can be more suitable than either *W. radicans* or *orientalis*; and even the bare brow of a rockery may be clad in lovely verdure by planting a large Woodwardia, of either of the kinds just named, near the objectionable spot, and spreading the fronds over it in such a manner that the young plants at the ends of the long shoots may strike root and establish themselves where wanted. Woodwardias when in pots are also useful for brackets or for temporary room decoration on pedestals. *W. areolata* is a fine North American species, perfectly hardy; but, like the two kinds just named, well deserving of a place in a cool house. *W. virginica*, another North American kind, is also hardy, and when well grown, very handsome. Its fronds, which are of a pale green

colour, are thrown up from an underground stem to a height of from one to two feet. To these may be added an evergreen Japanese species (*W. japonica*), likewise a distinct and handsome Fern for a cool house.



Woodwardia radicans.

INDOOR HYACINTHS.

Now that the season for obtaining Hyacinths has come round, it may be well to indicate some of the best of the moderate-priced and really good kinds, grouping them according to colour. With but few exceptions, I am constrained to urge that a marked preference should be given to single over double flowers. In the blue division, Lanrens Koster, glossy dark blue, large and handsome; Garrick, bright violet blue; Van Speyk, pale greyish blue, is also a fine flower. The last-named variety requires a good deal of heat to get the spike finely developed. These are the very cream of the double blue varieties; but they are almost too high in price for general use. Cheap double blue Hyacinths are scarcely worth pot culture. The lack of good flowers among the double varieties is amply compensated for in the single division. Some of the most beautiful Hyacinths grown are included in the moderately-priced single blue group. The darkest shades—really black-blue—are represented by Baron Van Tuyl; Baron von Humboldt, dark blue, striped with black; Bleu Mourant; Feruck Khau, very dark shining blue. purple, extra fine; Marie, shaded dark violet, very fine; Madame Coster, Mimosa, Prince Albert, Uncle Tom, and William the First. I have not included Argus, which has a fine hue of deep blue, inasmuch as it is a variety that it is difficult to bloom well; nor have I enumerated General Havelock, a glossy black-purple, and King of the Blues, shaded purple-blue, because, though very fine, they are scarce and high in price. Then comes a group of intermediate tints, in which deep lilac and violet may be said to prevail, as seen in such flowers as that fine old variety Charles Dickens, General Lauriston, Leonidas, Lord Palmerston, a very beautiful variety, Orondates, Porcelain Sceptre, and Regulus. They come the palest of all, in which silver and grey appear to be blended with very pale tints of blue, and in this group we get Blondin; Couronne de Celle, a beautiful flower,

though the bulb is nearly always rough in appearance; Grand Lilas, one of the finest and most reliable of pale blue Hyacinths; and Grande Védette. The fine new varieties—Czar Peter, La Grande Resemblance, and Princess Mary of Cambridge—also come into this group; but their high prices are almost prohibitory. The double-red class contains but few flowers to be highly commended. Kohinoor; the beautiful pale-blush Lord Wellington, which always forms a massive spike even when grown in a glass; Noble par Mérite, Prince of Orange, and the old Waterloo (the last because of its colour) are decidedly the best. Yet, except to those who perceive in double flowers a peculiar beauty that single flowers do not possess—the foregoing are much inferior to the single varieties, as larger spikes and deeper hues are found in the latter. Take a group of the deepest shades—really red and crimson hues—and we get such superb flowers as Garibaldi, bright crimson; Howard, fiery red, very fine; L'Écincelante, glowing crimson; Lina, pale rosy crimson; Linnaeus, bright deep carmine; Prince Albert Victor, rich dark shining crimson; Reine des Cacinthes, bright deep carmine; Robert Stieger; Solfaterre, brilliant orange-red; and the magnificent but high-priced Vuurbaak, with its large fiery crimson truss. Of the varieties just enumerated those described are the most expensive; but year by year, as these varieties become more grown, they become slightly cheaper. A group comprising flowers with intermediate tints—such as rose, crimson, deep pink, &c.—includes Cavaignac, pink, striped bright rose; Cosmos, Duchess of Richmond, La Dame du Lac, La Joyeuse, Le Prophète, Macaulay, Madame Hodgson, Sultan's Favourite, and Von Schiller. Blush and very pale pink flowers include Emmeline, Gigantea, Lord Wellington, Marie Cornelia, Norma, Ornement de la Nature, Princess Charlotte, and Tubiflora.

There is a still greater dearth of good double white Hyacinths, and of the double yellow section not one is worthy of cultivation. La Tour d'Auvergne, and Prince of Waterloo, both pure in colour, and forming fair spikes, are the best double white varieties. A new form, named Miss Nightingale, was shown last year, but it appears to be scarce, and therefore high-priced. The single white Hyacinths must be put into two groups—the pure white and the cream white flowers. They might be further divided into large-belled and small-belled flowers, but it is scarcely necessary in this relation. Alba Maxima; Baroness Van der Duin, a small-belled snowball, and a very fine Hyacinth; Bareness Van Tuyl, a sport from the old single blue variety under that name; Grand Vainqueur, Madame Talleyrand, Madame Van der Hoop, Mont Blanc, Paix de l'Europe, Queen of the Netherlands, and Queen Victoria, are all very fine in the pure white section. La Grandesse, L'Innocence, and Snowball are magnificent large-belled flowers in this section, but rather dear. The best of the blush or cream flowers are Anna Paulowna, a single sport from the old double Grootvoorst; Elfrida, Grandeur à Merveille, Mammoth, Orondates, and Seraphine. It is somewhat curious to note that some blush varieties are included among the reds, and some among the whites; and what is really wanted is a separate section for blush flowers. In some catalogues certain varieties of this tint of colour will be found among the reds, in others among the whites. The yellow Hyacinths are very acceptable among the bright-hued red and blue varieties. They are much less numerous than either of the other sections, but they include some fine flowers. The best are Alida Jacoba, Anna Carolina; Duc de Malakoff, buff striped with red, a fine and distinct variety usually included among the single red flowers; Heroine; Ida, clear primrose, one of the best; La Citronnière and Liberia, bright yellow. Bird of Paradise, a very fine variety, is too high in price to allow of its being generally cultivated for a few years to come.

One of the most interesting sections yet remains, and that is what is known as the mauve class, the prevailing hues of the flowers partaking of lilac or mauve, mingled with claret or mulberry. The varieties ranged under this head are all very distinct, because possessing so much individuality of colour, and some very fine new types have been added of recent years. The cheaper varieties are as follows: Adeline Patti, reddish lilac; De Caudolle, claret-lilac, with stripes of violet blue, spike very handsome and fine; Haydn, lilac mauve, distinct and fine; Sir E. Landseer, amber and lilac, suffused with claret, a good flower; Voltaire, lilac-mauve with white centre, a novel and striking flower; Charles Dickens, light violet and claret; and Sir Henry Havelock, shining purplish claret, are new flowers of great beauty. The foregoing are all single varieties.

CURIOUS WAY OF GROWING EXOTIC WATER LILIES.

I NEVER saw these plants so fine as I have seen them growing in the open air near Berlin, with the exception of one species—viz., *Nymphæa Lotus*. This I have grown in the stove aquarium to measure upwards of twenty feet across, that is in the spread of its

leaves. The instance I cite, in which I saw *Nymphæas* thriving so well, was in the fine garden of Herr Borsig, at Moabit. An ornamental stream meanders through the grounds; in this are planted all the species and varieties of *Nymphæa* that can be procured (and there are several very ornamental hybrids which have originated in the Botanic Garden of Berlin). At the sides of the streams, such plants as *Nelumbium speciosum* (the Sacred Bean of the Egyptians), *Papyrus antiquorum*, &c., are planted in masses, and thrive luxuriantly; indeed, I have never been so enchanted with sub-tropical gardening as here. Herr Borsig is a great manufacturer, his factories are adjacent to the garden, and into the stream mentioned above all waste steam and hot water is made to discharge itself; the overflow running away into the river Spree, which bounds the garden on one side. By this means the water is kept at a suitable temperature for the development of the tropical plants, and that, too, without trouble and without expense. Now, this cannot be followed out by our large manufacturers in such places as Manchester, Sheffield, Liverpool, and other large towns, because, as a rule, the factories are in town, and the proprietors live in the suburbs; yet there are many places where a similar plan is quite practicable. Even in places where such facilities do not exist I have seen a similar result obtained, by laying a row of hot-water pipes through a piece of ornamental water, and attaching them to a greenhouse boiler. By this means a large aquarium may be enjoyed without the expense of building a house, and without being compelled to submit to the temperature of a Turkish bath to enjoy the beauties of the flowers.—*Villa Gardener*.

Dendrobium Falconeri.—May I be permitted to inquire of some of your correspondents what treatment they would recommend for a young plant of this *Dendrobium*? I obtained the plant in a small state some eighteen months ago, when it had three leading shoots on it; I planted it in a pan and suspended it from the roof; it soon commenced to grow. In autumn last year I thought I should be doing right to follow the advice laid down in Mr. Williams's "Orchid-Grower's Manual," viz., to place it in a lower temperature and keep it drier, and thereby induce it to rest; but I found that instead of doing so it persisted in growing. I then commenced, by occasional waterings, to assist it, and placed it in a warmer position. It has made a continuous and steady growth ever since, and it is now growing as vigorously as ever, the nodes being three-eighths of an inch in diameter. It seems a pity to arrest such healthy progress, yet experience and all our great Orchid growers tell us that no plant will continue long in good health without a period of rest, and as we are on the eve of that period I should be grateful if some one would kindly say what course they would recommend with regard to its present and future well-doing.—S. EYRE, *Leek*.

Seedling Tree Carnation, Miss Jolliffe.—As at this season gardeners are generally looking to their stock of winter-flowering plants, I may mention that among the many used for that purpose none exceeds in usefulness the different kinds of Tree Carnation. As Tree Carnations are such easy plants to propagate and grow, and require scarcely any artificial heat to have them blooming in perfection all the winter, I wonder they are not more popular than they are; their blooms, too, are admirably suited for vases or button-hole and hand bouquets. Of the many kinds in cultivation, Miss Jolliffe, a seedling raised at Campsey Ash, Wickham Market, is a real acquisition, and will, when better known, doubtless find a place in most good collections of these plants. The flowers of it are of a delicate flesh-colour and most agreeably scented, and it is one of the most profuse bloomers I have yet met with. The plants we received for trial last winter have never been without bloom on them, and our stock of spring-struck plants, in pots out of doors, is now showing abundance of flower-buds.—J. GROOM, *gardener to Earl Stradbroke, Henham Hall, Suffolk*.

The Crape Myrtle (*Lagerstræmia indica*).—Of this there is a pure white variety, introduced by Naniz and Neuner, which has lately been brought into notice in the United States. It supplies a long-felt want, forming a lovely companion plant to the pink varieties that are so brilliant in the States during the summer and autumn months.

Colour Influence on Vegetation.—In order to test the effect of green light on the sensitiveness of the *Mimosa*, M. Bert placed several plants under bell-glasses of different colours set in a warm greenhouse. At the end of a few hours a difference was apparent. Those subjected to green, yellow, or red light had the petioles erect, and the leaflets expanded; those under the blue and the violet, on the other hand, had the petioles almost horizontal, and the leaflets hanging down. In a week those placed beneath blackened glass were already less sensitive; in twelve days they were dead or dying. From that time, the plants under the green

glass were entirely insensitive, and in four days more were dead. At this time the plants under the other glasses were perfectly healthy and sensitive; but there was a great inequality of development among them. Those under white glass had made great progress; under red less; under yellow a little less still; while those under the violet and blue did not appear to have grown at all. After sixteen days the vigorous plants from the uncoloured bell-glass were moved to the green. In eight days they had become less sensitive; in two more the sensitiveness had almost entirely disappeared, and in another week they were all dead. Green rays of light appear to have no greater influence on vegetation than complete absence of light; and M. Bert believes that the Sensitive Plant exhibits only the same phenomenon as all plants would under green glass, but to an excessive degree.

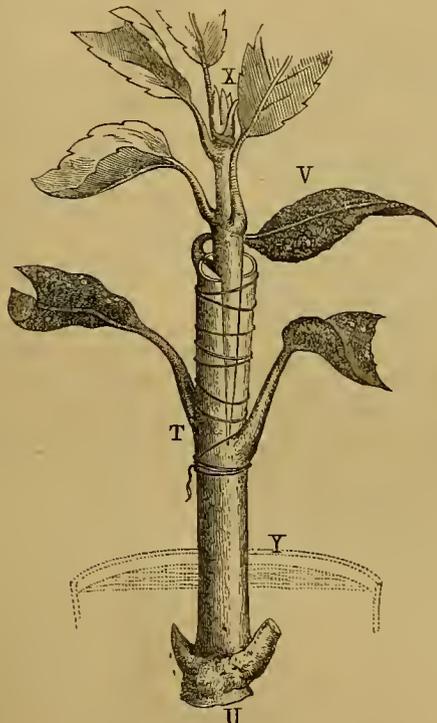
THE PROPAGATOR.

THE ART OF GRAFTING.

(Continued from p. 285.)

MIXED GRAFTING.

GRAFTING ON A STOCK WHICH IS A CUTTING.—The stock (T) is a portion of an *Aucuba japonica* prepared as a cutting; the lower part is cut under a bud, and the top is furnished with one bud and one leaf (V) just opposite the place destined to

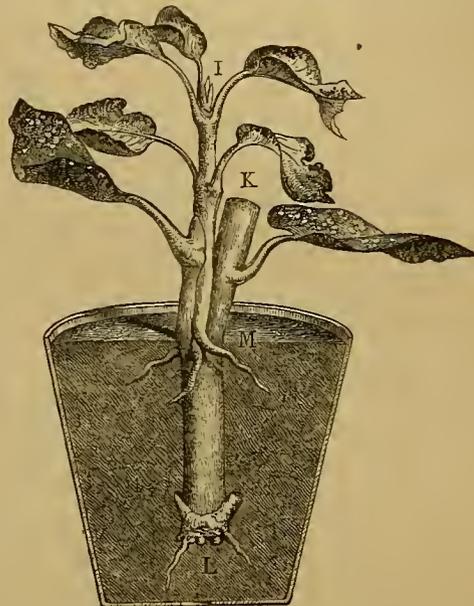


Grafting on a cutting (*Aucuba*).

receive the scion. The leaves on the buried part are cut down to the stalk, and the others have half the blade cut away. The scion (X) is taken from the variety which it is desired to propagate. It is cut and inserted in the top of the stock in the manner described in cleft-grafting or inlaying. It should be bound with a pliant, broad, and flat bandage. Under glass mastic is unnecessary. The stock thus grafted is planted in a cutting-pot (Y), and placed under a cloche or bell-glass in heat until the stock produces roots and the scion begins to sprout. Air is then given by removing the cloche, and in a short time it is placed on a shelf in the house. It is gradually hardened off under a frame and shade. The *Aucuba*, Orange tree, Camellia, and *Euonymus japonicus* may be propagated in this way. Grafts in the condition of saplings, as the Poplar and Willow, also come under this class.

GRAFTING WITH TWO CUTTINGS.—This mode of grafting, which is used with the *Aucuba* and similar plants, consists in the union of two cuttings as stock and scion, both forming roots which promote their mutual cohesion and growth. The stock

is a portion prepared in all respects as if for a cutting. It is cut clean at L and K; the leaves at the base are cut down to the stalk, and those at the top through the middle of the blade. The scion (I) is cut equally on both sides in a sloping direction, as if for side-grafting in the alburnum. It is then inserted in a cleft in the top of the stock, and the graft is bandaged with a pliant fastening. The subject thus grafted is then potted and placed under a cloche in the propagating house. Before long, roots will be formed simultaneously by the stock (at L), and by the scion (at I), from which the graft will derive an increased amount of vigour. After at least a year's growth, the upper part of the stock between K and the graft is cut away, but it is better to retain the rooted part of the stock, instead of severing it from the graft. The natural



Grafting with two cuttings (*Aucuba*.)

roots of the latter, being near the surface of the soil, always eventually starve out and supersede the roots beneath them, so that they never spread.—C. Baltet.

(To be continued.)

ENGLISH NAMES.

WHY should the Robinia be still popularly misdesignated as the Acacia? Or why should the *Pyrus aucuparia* bear the objectionable name of Mountain Ash, while it likewise possesses the satisfactorily distinctive appellation of the Rowan tree? The name Sycamore properly appertains to the *Ficus Sycomorus* (ant *Sycomorus antiquorum*), but here it is misapplied to the *Acer Pseudo-Platanus*, which at least might be intelligibly discriminated as the Sycamore Maple. The shrubs which in this country are emphatically denominated Laurels are not Laurels (*Lauraceæ*) at all, but evergreen species of *Cerasus* or *Cherry*, namely, the so-called Cherry Laurel (*C. Laurocerasus*), which should rather be styled the Laurel Cherry, and the so-called Portugal Laurel (*C. lusitanica*). For the *Tilia europæa* the name of Linden is preferable to Lime, because we equally recognise the Limes of tropical countries (*Citrus Limetta* and *C. acida*) and the lime-juice which is extracted from them. The appellation Palm is misbestowed upon the broad-leaved Willow; and while Willow-herb may pass muster for the genus *Epilobium*, there is surely no reason to confer the name of French or Persian Willow (as is sometimes done) on the *E. angustifolium*. The finer yellow-flowering species of the kindred genus *Cenothera* are commonly styled in the West Indies Primrose Willows, and we call them Evening Primroses; but surely *Cenothera* should not be more difficult to popularise than *Ranunculus*, *Anemone*, *Rhododendron*, or a host of others now generally accepted and in

common use. Pine is currently applied to the so-called Pine-apple as well as to the Coniferous genus *Pinus*, no doubt from a resemblance which the fruit of the former bears externally to a Fir-cone, but the *double emploi* is still awkward; and, from the resemblance which the foliage of most of the Pandani bears to that of the Pine-apple plant (*Ananassa sativa*), they have come to be generally denominated Screw-pines. Why the *Lycium barbarum* should be popularly styled the Tea Plant is not obvious; but in Australia the name "Tea" is transferred to sundry Myrtaceæ, as different species of *Callistemon* and *Melaleuca*, and, again, in New Zealand, to *Leptospermum scoparium*.

In this country the name "corn" is about equivalent to cereal, though wheat is more emphatically so designated; but in North America the word "corn" exclusively denotes maize (*Zea Mays*), a name which it properly claims as its own. There are no true Cedars in America, so the appellation is transferred to the *Juniperus virginiana*, while the proper Cedar-wood for pencils is that of the *J. hermudiana*. The so-called Cedar of Honduras is *Cedrela odorata*, and that of Australia is *C. australis*; while other species of different genera are more or less known as Cedars in various parts of the world. Here we only designate as Hemlock certain poisonous Umbelliferæ (*Conium maculatum* and *Cicuta virosa*), but in North America the Hemlock or Hemlock Spruce is a noble kind of Fir (*Abies canadensis*). What we usually style the Virginian Creeper (*Ampelopsis hederacea*) is there more commonly recognised as the American Ivy. The Dodecatheon Meadia, which is popularly known as the Shooting Star in the Western States, is by us familiarly styled the American Cowslip; and the *Pulmonaria virginica* is termed the Virginian Cowslip, as our native *P. officinalis* is sometimes denominated the Jerusalem Cowslip, though for what reason I am unaware. The absurd name of Greek Valerian is not unfrequently applied to a North American plant common in our gardens, which is known also by the quaint appellation Jacob's Ladder (*Polemonium cæruleum*); and, as it is also the *Valériane grecque* of the French, no doubt we have thence derived the misnomer.

In Australia it is not surprising that the species of *Epacris* pass as Heaths, and the so-called Heather of the Himalaya is *Andromeda fastigiata*. The Tartarian Furze of sportsmen and others is the *Caragana Gerardiana*.

In the plains of India the Mendi or Henna (*Lawsonia alba*) is often termed native or Egyptian Privet; the *Murraya exotica* is styled Box; the *Melia Azederach* is commonly miscalled Persian Lilac; The *Terminalia Catappa* is currently known as the native Almond; *Physalis peruviana* is the native or Cape Gooseberry; *Zizyphus Jujuba* is the native Plum; the *Ægle Marmelos* is with some the native or Bengal Quince; and the *Hibiscus Sabdariffa* (from which excellent crimson jelly is prepared) is generally known to Europeans as the Indian Sorrel. In the flower garden the species of *Zephyranthes* are familiarly designated Crocuses. The species of *Alpinia*, which are grown as ornamental plants, are commonly mis-termed Cardamoms. The Tulip tree there is the arborescent *Hibiscus populnea*. The *Casuarina* are mostly known as Firs. As likewise here, the *Cycas revoluta* is usually denominated the Sago Palm, though it yields no Sago of commerce, nor is it a Palm; neither does the *Ficus elastica*, commonly known there, as here, as the india-rubber tree, supply any of the caoutchouc of commerce. The great supply of india-rubber comes from the basin of the Amazons, and is the produce of the Euphorbiaceous *Siphonia elastica* and kindred species.

A common garden shrub in India (*Gardenia florida*), which is there familiarly known as the *gândrúj*, is here commonly mis-designated the Cape Jasmine—a double error, as it happens to come originally from China. In India the *Jasminum Sambac* passes indifferently as the Cape or Arabian Jasmine; but is more commonly known by its native appellation *bél-fúl*. A coarse variety of *Rosa centifolia* is there generally denominated the Cape Rose, although it is well known to botanists that no sort of Rose is indigenous to the southern hemisphere. The name Tuberose, as applied to the Liliaceous *Polyanthes tuberosa*, is evidently a corruption from its French appellation, *tubéreuse*. The world clove, as applied to the spice so called, consisting of the unexpanded flower-buds of *Caryophyllus aromaticus*, refers to the nail-like shape

of those buds (Fr. *clou*, a nail), having a round knob or head of petals at the top of a long calyx tube; and we also use the expression cloves of garlic; then, from the clove-like perfume of the flowers, the name passes to a species of *Dianthus*, often designated the Clove Gilliflower. Now Gilliflower is mostly applied to Stocks and Wallflowers and some other Cruciferæ; so it may be asked, how does it come to be attached likewise to the *Dianthus Caryophyllus*? Because the latter is the *gérofle* or *gérofler* of the French, while the former are termed *giroflée* by the French, from both of which words we derive the name of Gilliflower. Familiar corruptions of Gallic designations occur in Pansy from *pensée*, and Dandelion from *dent de lion*! The name *Seringa* for the *Philadelphus coronarius* is not unfrequently confounded with *Syringa*, the botanical name for the Lilac genus, but it is derived from the French *séringa* or *séringat*.

The appellation *Nasturtium* applies properly to the Water-cress plant, but is commonly transferred to the species of *Tropæolum*, and *T. majus* is occasionally designated as the Indian Cress, from a resemblance in flavour which it bears to the garden Cress (*Lepidium sativum*); but all of the species of *Tropæolum* are of South American origin, and Indian in this case (as in so many others) bears reference to the unfortunate misdesignation of the human aborigines of the minor continent, applied by some writers even to those of Australia and the Pacific Islands. In India the *Mirabilis Jalapa* or Marvel of Peru is mostly supposed by Europeans to be the true jalap plant, and currently bears the appellation; while the name *Ipecacuanha* is misbestowed on sundry species, as especially *Asclepias curassavica* (which has become wild in the neighbourhood of Calcutta), the beautiful small twiner *Manettia cordifolia*, and sometimes on the *Ophiorrhiza Mungos*; while various other plants are so denominated in different countries, as *Euphorbia Ipecacuanha*, *Ionidium Ipecacuanha*, *Psychotria emetica*, and others; the genuine plant being the *Cephaëlis Ipecacuanha*, one of the *Cinchonaceæ*, to which family the *Manettia*, *Ophiorrhiza*, and *Psychotria* also appertain, while the *Ionidium* belongs to the group of Violets.

Coco and Cocoa are names inconveniently alike, and might be discriminated in writing. I prefer Cocoa-nut Palm for the *Cocos nucifera*, and Cacao is preferable for the *Theobroma Cacao*, which yields the cacao or cocoa from which chocolate is prepared. But then we have the fruit of the *Chrysobalanus Icaco*, designated the Coco or Cocoa Plum in the West Indies, while the tuberous root of *Colocasia antiquorum* is known to some as the Coco or Cocoa root; for the latter, however, Taro might well be substituted, being the Polynesian name for the roots of *C. esculenta* and *C. macrorrhiza*, all of which are sufficiently alike when cooked. Some of the most dissimilar of fruits, whether edible or inedible, if only of a certain size, have come to be popularly styled Apples; even the gall-excrecence which is familiarly known as the Oak-apple. When the Pine-apple came to be first known in this country, it was probably grown of Apple size. The Tomato is the Love-apple and the seed-vessels of *Datura Stramonium* are Thorn-apples; those of *Solanum sodomæum* are Dead Sea Apples (illustrative of a passage in Scripture). In India we are familiar with Wood-apples (*Feronia Elephantum*), and in most tropical countries now with Custard-apples (*Anona reticulata*), Rose-apples (*Eugenia Jambos*), Star-apples (*Chrysophyllum Cainito*), Mammae-apples (*Mammea americana*), &c. There are fewer of so-called Pears which are not Pears, the most popular of which are Prickly Pears (*Opuntia vulgaris*), Avocado or Alligator Pears (*Persca gratissima*), and Anchovy Pears (*Grias cauliflora*). The fruit of *Opuntia vulgaris* is also known as Barbary or Indian Figs. Several species of *Spondias* bear what are designated Hog Plums in the West Indies. We call raisins plums when we speak of a plum-pudding, while in the west of England raisins are called figs; and one of the most familiar of misnomers is that of currant as applied to the fruit of the seedless currant grapevine known as grocer's currants. Among our floral names Lily is one of particularly loose application, ranging from Water-lilies to Lilies of the Valley, and bestowed upon not a few of the *Amaryllidaceæ*. The *Richardia æthiopica* is the Trumpet Lily of some people, and *Fritillaria persica* is occasionally denominated the Persian Lily: so that the name Lily

about as vaguely misapplied as Rose. In Australia the term Honeysuckle is bestowed on *Banksia serrata* and *B. integrifolia*. The *Casuarina stricta* is the he-oak, and the *C. quadrivalvis* is the she-oak; but the latter is, I believe, a corruption of a native name *shiook*, or something like it, in which case the former is mistakenly antithetical. In numerous cases the familiar names of plants of the northern hemisphere are transferred to species more or less vaguely resembling them in Australia and New Zealand.—“Z.,” in the *Field*.

THE WALL GARDEN.

In our recent notes on Cliveden we alluded to the charmingly covered walls of the terrace, of which we now give an illustration. In every garden and on every house there is an opportunity of making a very garden of the walls, which, however, is seldom taken advantage of.

Walls in the ornamental parts of gardens are seldom well covered. Now, if we cannot, among the large number of plants upon which we may draw, find enough handsome and really effective climbers wherewith to cover every particle of wall with beauty, we certainly have very little to boast of.

Walls afford the best positions for many things that grow but poorly in the open air without their aid. Well covered in every part with good climbers, the stiffest and most awkward of wall surfaces becomes a thing of beauty, and may afford interest and flowers at all seasons, from that of the wintry bloom of the clear yellow *Jasminum nudiflorum* to the heats of early autumn, when the fine *Clematises* become masses of bloom. The climate of the British Isles is so much varied that plants which grow as standard in the south may require a wall in the north; in the south we may have walls covered with sweet *Verbena*, and even with *Pittosporum*. In the south we grow the *Figas* a standard; in the north it can barely exist with a wall. But in all parts we may make good use of every particle of flower garden wall, no

matter what its texture, aspect, or height. The first and most important consideration in the covering of garden walls is the selection of the plants. But even where these are well selected, there is frequently a mistake made in the training, by paying no proper attention to train the tree over the wall in a spreading manner, but, on the contrary, allowing it to run “up to a head,” so to speak, each plant being top-heavy, and narrow and naked at the bottom. Instead of taking one good specimen and making it cover a large portion of the wall, people plant too thickly, and then continually clip away the luxuriant shoots that ought to widely furnish the wall. In training, the strongest shoots should be taken to the right and left, to send up straight shoots themselves. The object should be to keep every part of the wall covered, the centre of the tree as much so as the top of the wall, and in fact all parts equally. When once the trainer is impressed with the desirability of covering the wall equally in all its parts, he will have no difficulty in doing so. A great point is to make the strong-growing kinds cover a great deal of surface. Confine them to a small space, and you must cut them away fortnightly, or allow them to run wild. In the case of certain species the fan shape will be preferable to that above-named. In all cases the main thing to guard against

is the plant running up to the top of the wall in a crowded narrow form.

Now for the selection. A great many things are named in lists of wall plants, &c., which while doing very well in such positions, rarely flower or exhibit any beauty. We must name a few more of these than we desire, in case some people should be disappointed at their omission: and, besides, they may now and then be found to have their special uses. But to make the selection more useful we will place an asterisk before the names of all such as are A 1 for ordinary purposes, and worthy of general recommendation. We must place the *Irish Ivy at the head of all evergreen climbers. The rich sheets of verdure it produces are not to be equalled by those of any other plant that grows with us. The varieties of the common Ivy are so numerous and beautiful, that little space can be afforded for the old forms in the garden proper; but few can resist the charms of the variegated varieties and **Hedera Rægnieriana*. **Cotoneaster Simmondsii* will prove a rapid growing fine thing for high walls, and should have a place on a warm wall in every garden. *Bignonia capreolata* and *Tecoma radicans* are both good for walls with good aspects in the warmer parts of the country. **Passiflora cærulea* will not do much in the colder

parts, but generally will be found to thrive on a warm wall. A house sprinkled over with its showy fruit in autumn looks very striking. **Chimonanthus fragrans*. Virginian Creeper—things of this kind, that grow freely upon bowers and over old trees, &c., should be, generally speaking, reserved for such places, as the wall space will be little enough for the plants that really require its extra heat. **Wistaria sinensis* and *alba*. The *Weigelas* are well fitted for low walls; **Magnolia grandiflora* and its varieties, particularly the Exmouth one; **Jasminum officinale* and **nudiflorum*; the *Escallonias*; **Cratægus Pyracantha*; *Clematis atroviolacea*, *C. azurea grandiflora*, **C. Flammula*, *C. florida*, *C. florida fl. pl.*, **C. Sieboldii* (bicolor), *C. Fortunei*, *C. Guascoi*, *C. Hendersonii*, **C. Jackmanii*, **C. lanugi-*



View of the Terrace Walls at Cliveden.

noza, *C. lanuginosa pallida*, **C. montana*, *C. regina*, *C. rubroviolacea*, *C. Standishii*, *C. Viticella*, *C. Viticella venosa*; **Ceanothus azureus*, *thyrsifolius*, *C. azureus grandiflorus*, *C. dentatus*, *C. floribundus*, *C. Lobbianus*, **C. papillosus*, and *C. velutinus*. The *Ceanothuses* do very well in the warmer districts, and in the west, though they are liable to be cut off occasionally by hard frosts. Tea Roses: These are the most beautiful of all things for covering low walls having good aspects, such as frequently occur in terraced and other gardens. For high walls, as those of houses, there is probably nothing to equal the Banksian Roses, which will cover a house to a height of forty feet with a sheet of bloom. Strong climbing kinds should not be placed on the select walls, but on rough banks, &c. **Lonicera* in variety; **Abutilon vitifolium*—this is a good plant, not at all sufficiently known; may prove a little too tender for some parts, but is a capital plant for the milder localities; will require a good stretch of wall. As for fugacious annual things for walls, it is better to avoid them; all such plants are better trained on low trellises, as by so doing we avoid the trouble of nailing them; they turn round the wires and take care of themselves. The great **Rubus biflorus*, with its apparently whitewashed stems, grows freely in the open air with us: in many parts the shelter of a wall has proved acceptable. The *Camellia* may be grown as a

wall plant in warm and genial parts of Britain, and even the Tea Plant lives with a good aspect and light warm soil. The sweet Verbena, so grateful to many, is best grown against a wall, even in those parts where it does not survive the winter. Probably the most attractive of all plants for a wall is *Indigofera floribunda*; it blooms all summer, and the flower-laden shoots weep in a very graceful manner. The new *Ampelopsis tricuspidata* is, of course, indispensable for high walls; it covers them with such a dense verdure throughout the summer and glows into such brilliant colour in autumn.

THE GARDEN FLORA.

NEW PLANTS.

Plagianthus Lyallii.—A handsome dwarf Malvaceous tree from New Zealand, with oval, heart-shaped, broadly-toothed, pointed leaves, and white flowers with yellow stamens and rose-coloured styles, resembling those of *Sparmannia africana*. Discovered and named after M. Lyall, naturalist to the expedition of the Acheron. Requires cool house treatment.

Lachenalia tricolor var. aurea.—A very remarkable and handsome variety, with bright golden-yellow flowers of wax-like texture. Of the numerous forms of *L. tricolor* now in cultivation this is undoubtedly one of the most striking and elegant, the rich yellow of the flowers being agreeably relieved by the crimson tinge on the outer divisions.

Monanthes muralis.—A pretty little plant, allied to the *Sempervivum*, forming dwarf tufts of prostrate branches from one to three inches long, which bear a densely imbricated rosette of short succulent leaves towards the apex. Flowers yellow, about a quarter of an inch in diameter, in terminal cymes on the ends of the branches. Found on walls and rocks in the Canary Islands and Morocco.—*Bot. Mag.*

Mimulus Roezlii.—A very dwarf species, discovered by Dr. Roez on the Sierra Nevada of California. It is scarcely two inches in height, and has some resemblance to *M. cupreus*, from which, however, it may be at once distinguished by the lively red colour of its flowers, those of *M. cupreus* being rather of a coppery or orange scarlet. It is a very free-flowering plant, and bears exposure to the sun without suffering any detriment.

Masdevallia Lindenii.—A very singular-looking Orchid from Central America, bearing curiously-shaped flowers, about 3 inches long and of a blood-red colour. The petals are linear-oblong and much pointed. Leaves 6 to 10 inches long, obovate, leathery, and of a very dark-green colour. The yellow tube formed by the connate sepals contrasts finely with the red hue of the remainder of the flower. The plant was flowered this year by Dr. Moore at Glasnevin.

Thladiantha dubia.—A handsome creeping perennial, of the *Gonrd* family, originally discovered by Bunge in Northern China, but since found also on the mountains of Northern India, at an elevation of from 5,000 feet to 6,000 feet. The long climbing stems bear a profusion of bright yellow flowers, together with heart-shaped leaves of an agreeable lively green colour; and as the plant is very hardy, it may be effectively employed for covering trellises, arbours, &c. In the neighbourhood of Paris it survives the winter in the open ground.

Xanthoceras Sorbifolia.—A beautiful hardy ornamental tree, discovered by the Abbé David in Chinese Tartary, and sent by him to the Muséum at Paris in 1868. It grows to the height of from ten to thirteen feet, branching so much as to be almost bush-like in habit, the branches standing nearly erect. The leaves resemble those of the *Sorbus* so closely that its specific name of *Sorbifolia* is most happily applied. The flowers are very handsome, and are more than an inch across, of a creamy white, sometimes very slightly tinged with flesh-colour, with a coppery red centre, occasionally passing into a violet purple. Petals five, distant, spreading, slightly reflexed when the flower is fully expanded. It blooms early in April, simultaneously with the first appearance of the leaves, the flowers being exceedingly numerous and disposed in spike-like clusters eight inches or more in length. Although for the present confined to the gardens of the Muséum, which probably contain the only specimens of it to be found in Europe, we have no doubt this singularly pretty tree will ere long be distributed and find an appropriate place amongst kindred subjects in our parks and pleasure-grounds.

THE FLOWER GARDEN.

COLLECTING ORCHIDS ON THE CHALK HILLS OF SURREY.

This is a source of pleasure and excitement to the student of botany, and even those who scarcely bestow any attention at all on the flowers of the field are surprised into interest at the sight of a tall fresh Fly Orchis. The range of chalk hills reaching from Box-hill and passing on not far above Godstone, is a favourable place for Orchids. The Beech woods which clothe the slopes, and the lawns of turf in old chalk pits form the principal fields of search. We go out in the spring and summer, two or three friends together, with small trowels to assist the long and patient toil of sitting down to thoroughly grub up a long-stemmed Orchis. Then we anxiously question each other, on the next occasion of meeting, what else has been found; or one successful collector boasts triumphantly of his new discovery, and points to the coveted plant in his wild garden. Then there is the sending off in cardboard boxes of carefully packed specimens for the wild gardens of distant friends on different soils from this favoured chalk. So the season began which has but just ended with tall spires of seed-vessels on the graceful brown stems of the *Epipactis*. How pleasant now the damp autumn days are come to look back and remember all the flowers of spring and summer, and the pleasure they have brought us! The names of the Orchids bring back the old times. Who was so glad to see the honey-scented *Herminium* for the first time? Whose was the glory of finding the strange Man Orchis? What pleasant botanic expeditions do they remind us of! Wide views of Surrey, warm hill sides, and new life and happiness. Now we have the old remembrances of the botanic year and new ideas to prepare for next spring. The Fly Orchis, *Ophrys apifera*, comes out very early in the summer, and is very abundant under the shaws along the tops of the hills. Next in flower, and still more abundant, is the great Butterfly Orchis (*Habenaria chlorantha*). This grows in splendid groups 2 feet high, and has a truly magnificent blossom, with its regular pyramid of green and white flowers standing well up in the meadow grass. *Listera*, or Tway-blade, grows very luxuriantly in the damper woods. Very soon after these follows a crowd of pretty common Orchids, *O. maculata* and the fragrant *Gymnadenia*, which make the banks look wonderfully gay. It is sad how badly the Orchids dry as specimens. Black is their prevailing colour, or a dismal brown; our collection of *Orchidaceæ* in the herbarium presents a melancholy spectacle. The nicest looking and the most admired of all our Orchids is the Bee; its bright lilac petals, with a velvet bee in the centre, are truly bewitching. The Man Orchis is rare here, and considered a great prize, hanging by his little green head, with arms and legs complete. The *Herminium* or Musk Orchis is something like it, only small and much more abundant; it is very pretty, sweet-smelling, and easy to transplant. It is the *Helleborine*, the beautiful *Serapias*, that gives so much trouble in digging down its slender stem, through the scanty leaf-soil of a Beech wood into the hard chalk, and cutting out a solid bit with the bulbs in its centre. The *Epipactises* are very beautiful about here. We have the great white-flowered one, *E. latifolia*, and the great purple variety, with blossom stems three feet high, with a dark purple centre not unlike a dark bee; also the white *E. ensifolia*. Late in the summer we have a good deal of "*Monotropa*," or Bird's Nest (which some of us used to consider the Bird's Nest Orchis till experience taught us better); it is a curious scaly-looking plant, growing on roots of trees. M. A. D.

TROPÆOLUM MRS. BOWMAN.

AMONG the most valuable new bedding plants of this year may be enumerated this beautiful *Tropæolum*, sent out this season by Messrs. Downie, Laird, and Laing, of the Stansted Park Nurseries, Forest Hill, from whom I obtained a single plant at the commencement of this summer, which I planted in the middle of a small round bed which I edged with recently-struck cuttings of *Mesembryanthemum cordifolium variegatum*; owing, however, to the extreme wetness and ungeniality of the season, the *Mesembryanthemum* made no growth whatever, and had it not been for the *Tropæolum* the bed would have been a blank. This fine plant, however, soon completely covered the bed, and continued to produce its brilliant blossoms, well raised above the foliage, which is a fine dark green, without intermission during the whole summer. The flowers are of a medium size and of a fine stout persistent character, admirably suited to withstand the battering of heavy rain, hail, &c., which seemed to have no effect upon them, when *Geranium* blossoms, and even those of other *Nasturtiums*, were much the worse for a heavy shower. Seeing how very showy and effective this fine variety has been during the cold and wet summer just passed, I quite look forward to its being much

finer and better in a sunnier and more genial season. I may add that the blossoms are produced in such profusion all along the young shoots, that, when removing these for cuttings, of which I have already taken off some fifty, which root in silver sand with extreme facility, a large number of blossoms had to be sacrificed, which would, had they been allowed to come to maturity, have made the bed beautiful till destroyed by the frost. A bed of this *Tropæolum* edged with the variegated variety *Minnie Warren*, or the golden variegated lemon-scented *Thyme*, would be both gay and pretty, and is a combination that would be well worth adopting next season. Another variety of bedding *Tropæolum* of a lighter shade, named *Mrs. Treadwell*, was also sent out this season by the same firm, but this I have not yet tested. If as good as *Mrs. Bowman*, however, it will be an acquisition. W. E. G.

THE ONOPORDONS.

THESE are mostly biennial plants, and have a vigorous and picturesque habit of growth. The well known Scotch Thistle, *O. Acanthium*, of which we give an illustration, belongs to this genus. It is a native plant, of bold habit and vigorous growth, with stout, branching stems often more than five feet high, and very large, undulating, spiny leaves, covered with long, whitish, cobweb-like hairs. Flowers purplish, in large, solitary, terminal heads. *O. illyricum* has greener and more deeply-cut leaves, stiffer stems, a more branching habit, and much more spiny leaves and stems. *O. arabicum* grows to the height of nearly eight feet, with an erect and very slightly branching habit, and has both sides of the leaves, as well as the stems, covered with a white down. All these species are very hardy, and thrive well in ordinary soil. They are particularly adapted for the rougher and more neglected parts of pleasure grounds, and in these positions they will show themselves, and require no care whatever.



Onopordon Acanthium.

Perilla nankinensis laciniata.—This is really a novel and striking form of the old *Perilla nankinensis*, and will please all who grow it. It resembles the common *Perilla* in growth and colour, but the leaves are deeply serrated and curled, which gives it a most ornamental appearance. I find that it stands drought remarkably well and lasts out the summer without change of appearance; those, therefore, who want a good dark foliage plant for their summer gardens will find something both cheap and useful in this *Perilla*. Single plants of it dotted in the midst of patches of white foliage plants look well, and where ribbon or border decoration is in vogue it will make a capital back-row plant. The objections which have been and are being raised against what is known as the bedding-out system will have weight only in proportion as the bedding display proves vulgar or tasteful. This *Perilla*, fortunately, can only be pronounced vulgar when in bad company, but if judiciously used it will prove to many gardeners a most useful acquisition.—A. D.

Flowering Shrubs in the South of Ireland.—The extreme hardness of the *Fuchsia* family struck me more than anything else. In a belt of plantation surrounding part of the grounds of Mr. Baldwin, just above the picturesque harbour of Glandore, the old *Fuchsia* is planted as an undergrowth, and forms dense masses, dripping with a crimson rain of drooping flowers, which produce a most gorgeous effect of colour. In the neighbourhood of Castle Haven, not far from the great rugged cliffs of Toe Head, I noticed several hedges of considerable extent formed entirely of *Fuchsias*, just then in the full glory of their bloom; and, will it be believed? a ruthless wretch was shearing the hedge to make it grow thicker, this being the best time for so doing, as he informed me. I noticed in the course of my rambles many shrubs which are very tender with us, except in some favoured parts of Devonshire, growing very

luxuriantly. *Buddleia globosa* was growing so rankly at Loch Ine as to be over 30 feet high, and one of the plants covered a piece of ground fully 40 feet in diameter. The rich orange blooms with which these elegant shrubs were profusely covered looked like little balls of fire, and the backs of the leaves being of a bright opaque white, while the upper surface is of a rich full green, imparts a great variety of tone and attractively changeful aspect to this fine shrub whenever the foliage is stirred by the wind. Another ornamental shrub which thrives with great luxuriance in this part of Ireland is *Veronica Lindleyana*, of which I have seen plants above 12 feet high, and densely covered with its softly tinted spikes of bloom, as delicate as marabout plumes.—H.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

***Cestrum aurantiacum*.**—We observe that this fine old plant is flowering freely in the open air at Cliswick. The plants are in pots, and were plunged out of doors many weeks ago. There can be no doubt, therefore, that it would be useful in the flower garden in the southern parts of England.

Blue Hydrangeas.—M. J. Durosset, in a letter to the *Revue Horticole*, states that he knows from experience that the admixture of coal cinders with the soil in which Hydrangeas are grown is sufficient to cause the production of blue flowers on these plants.

Himalayan Cyananth (*Cyananthus lobatus*).—This fine and very distinct blue flowering rock plant is remarkable for the continuity of its blossoming. It is now flowering abundantly, and will probably continue so till winter sets in. It has been in flower since July.—R.

The Chili Lomaria (*Lomaria chilensis*).—This noble and stately Fern, one of the handsomest in cultivation, is quite hardy. The proof is that it is now thriving perfectly in the bog-bed at Messrs. Backhouse's nurseries, York, among *Ling*, *Sarracenia purpurea*, *Butterworts*, the *Bog Pimpernel*, and various other hardy bog plants, native and exotic.—W. R.

***Acer Negundo variegatum* in the Flower Garden.**—Mr. Walsh, the able gardener at Mount Merrion, near Dublin, uses specimens of this plant about five feet high with very good effect in his telling ribbon-border. They are planted at intervals along the border and break it up in a desirable way.—H. G. G.

The Crisped Wood Mallow (*Malva sylvestris*, var.)—We desire to call attention to this very interesting form of the common Mallow. It is as prettily crisp as the old *Malva crispa*. It should prove very useful for garnishing, if for nothing else. It is one of the many interesting varieties of native plants found by our correspondent, Mr. Elliot, of Sydenham.

The Winter Heliotrope.—On page 305 of the first volume of THE GARDEN, Mr. Taylor, of Longleat, mentions the Winter Heliotrope as being just the plant I want; but my nurserymen here do not know it by that name. Will you please inform me what its botanical name is.—J. O. [The Winter Heliotrope is a plant wild in many parts of Britain: its botanical name is *Tussilago fragrans*.]

Striking Annuals in Flower in September.—The double variety of *Portulaca grandiflora* is a grand and striking addition to this class of plants. It has a splendid semi-double yellow flower, flaked and centred with crimson. Of a widely-different character is the *Saponaria Vaccaria*, a tall, reddish lilac soapwort, very distinct and effective, though without the brilliant glow of the *S. calabrica*.—D. T. F.

Siebold's Stonecrop in Vases.—There is a peculiar charm about this plant, when grown in a small or medium sized vase, in the open air of course. A plant of it has been five years in a small classic vase in Professor Owen's garden in Richmond Park, and has just now a pretty effect. The greyish tone of the plant makes it hardly distinguishable from the vase, while the thick and apparently carved leaves have also a stone-like look. It thrives well in a little sandy loam.

***Eriogonum umbellatum*.**—I note with surprise that this is spoken of by one of your correspondents as being mostly a shy bloomer. Since my first introduction of this plant, some six or seven years ago, I have grown it in light sandy soil, in which it has never failed to bloom profusely. There is in cultivation an allied species, *E. flavum*, which is very shy in yielding its flowers. Is it possible that the plant may have been mistaken for the true *E. umbellatum*?—W. THOMPSON.

***Arundo conspicua variegata*.**—I was pleased to see this noble variegated grass in very fine condition in the Rev. Mr. Peach's garden at Appleton-le-Siret, in Yorkshire, the other day. It may be useful to know that it thrives well in the north as well as the south of England, as it is certainly the noblest variegated grass we have, and a very striking object in the flower garden, in which it may be used as it is by Mr. Peach in combination with bedding plants or as an isolated plant on the turf. It is also a very fine object in the greenhouse. Mr. Peach strikes it easily from cuttings, each joint forming one.—R.

The Colchicums.—It is astonishing how little use is made of these autumnal flowers. Three or four varieties are now (September) glowing with a delicate spotless beauty that nothing can exceed in the Cambridge Botanic Garden. The *Colchicum variegatum* is, perhaps, the most beautiful; it is nicely mottled. The *C. byzantinum* is better known; and there is likewise a darker variety of it here. The *C. autumnale* and the darker variety of the same are also in bloom. How is it that these continue so scarce, and that few new varieties have been raised? These *Colchicums* are assuredly as beautiful, and might become as plentiful and indispensable in every garden, as spring *Crocuses*.—D. T. F.

The Cut-leaved Campanula (*C. laciniata*).—This plant, which has long been unknown except from the description given by Tournefort, who discovered it in 1700 on an island in the Archipelago, has recently been re-discovered by M. Orphanides, and is now grown by MM. Ch. Huber & Co., at Hyères. The following is Tournefort's description of it: "It is the finest *Campanula* in Greece, growing about 2 feet high, with a rounded shrub-like habit, tufted and branched from the base; the first leaves are about 8 inches long by 2½ inches wide, and are deeply cut, like those of the common *Jacobæa*, glistening and marked with white veins; the stem is woody, as thick as the thumb at the base, and laden with flowers; each flower is about 1½ inch long and nearly 2 inches broad, of a spreading bell shape and of a fine blue colour." It is hardy in the south of France, and may prove an ornament to our intermediate houses.

THE KITCHEN GARDEN.

THE POTATO DISEASE.

WE had a large bed of Potatoes in our garden, writes a "Housewife" at Malvern, this year, planted partly by my husband and partly by a professional gardener. I watched them both at the work, and saw that it was done very differently by each, the former putting the sets but an inch beneath the surface of the ground, and the latter about 8 inches, and while the produce of the latter is more than two-thirds bad, that of the others, which were but just covered, is beautiful, with only here and there one diseased, and these were invariably the deepest in the earth. My theory is this: that as they were so near the surface, when the soil was hoed up to the growing plants, the channels made between the rows were much below the level of the tubers, consequently the wet, when it rained, soon drained off them; and as wet is acknowledged to be very detrimental to the health of the Potato, this drainage was about the only thing that could be done to preserve them, and really the result seems to prove the truth of it.

A correspondent who has been brought up in the belief that the Potato was not known to the Jews, asks us what Dr. Alfred Carpenter can mean by the following postscript to a letter of his on the Potato disease in the *Times*:—"Some of your correspondents would intimate that the Potato blight is a new disease. This can scarcely be correct, for its nature is clearly alluded to by the Jewish law-giver and, as a 'blasting influence' is clearly mentioned by several of the prophets. We also have conclusive evidence of its presence in very early times, for a few specimens have been found preserved in a fossil state in amber, with flies and other members of the insect tribe. This fact clearly proves that the disease is no new development." We confess that we cannot enlighten him.

During the period of the disease, a few years ago, says "W. B. N.," some friend of mine suggested the following plan, which I adopted. In planting the sets, I took care to have them from a totally different soil and climate from mine (which was light and sandy). The next thing was, not to allow anything in the shape of manure to come near them, but to plant them on ground which had been manured well in the previous year for Celery, Onions, and other crops. The last thing was to put them in with the ashes of refuse or wood ashes, so as to keep the sets as dry as possible. During three or four years of the worst period of the disease, I adopted the above plan, and I can assure you that my crop of Potatoes did not suffer a tenth part so much as those of my neighbours. Let me therefore hope that some of your readers will put this plan into practice, and report the result.

THE BELVOIR SYSTEM OF POTATO GROWING.

I HAVE carried out this system here for a few years, and by it I have this year of much disease a less percentage of diseased tubers than my neighbours. Added to its disease-frustrating peculiarity, there are one or two other excellencies which it possesses; the furrows are very useful for growing winter Greens, and when the Potatoes are lifted out, the soil of the ridges can be worked amongst the plants of Broccoli or other plants, thereby earthing them up efficiently; besides, you can change your crops so well, which is a most potent recommendation to the small grower. By putting strong pegs down to mark where the Potato lines are, you can next year put Potatoes where the winter Greens were, and winter Greens where Potatoes were. The plan should, however, I think, be called the Woodstock system of growing Potatoes, as it was first brought into notice by the Rev. Mr. Fenn, of Woodstock, Oxon.—N. H. POWNALL, *Roadcliffe-on-Trent, Nottingham.*

Potato Bosh.—The most absurd of the many foolish remarks on the Potato disease that we have seen occurred the other day in a leading article in the *Times*. "We believe we are right in saying that the culinary Potato is entirely a creature of cultivation. It has been described as an accident, a sort of sac or wen on the root, rather than a legitimate part of the plant or a fruit. If this be the case, we must certainly expect it to be a very sensitive and delicate thing. If the plant is labouring under a sort of disease to begin with, and compelled to feed a large adventitious mass from a very inadequate system, no wonder that it feels atmospheric shocks and disturbances even more than we do. The soil itself, too, partakes of these shocks and disturbances quite as much as the atmosphere." That a person capable of writing the above should be employed to write a leading article on the Potato disease in the *Times* is much to be regretted.

FORM OF GARDEN ACCOUNT-BOOK.

Will you kindly inform me where I can procure a printed book for keeping the account of vegetables and fruits consumed in a gentleman's house?—G. B. M., *Killarney*.—[The following form is that used in one of the best gardens in England. You can either keep it in writing or get it printed, as may be most convenient to you. The wave line in the middle indicates where the two lists should be separated. It, in short, represents a leaf of a garden account-book, one side being a check against that torn off.]

LIST OF VEGETABLES AND FRUITS FROM GARDENS. 187...				LIST OF VEGETABLES AND FRUITS FROM GARDENS. 187...			
Quantities		£	s. d.	Quantities		£	s. d.
Artichokes	Asparagus	Beet	Beans, French	Artichokes	Asparagus	Beet	Beans, French
Broccoli	Brussels	Sprouts	Cabbages	Broccoli	Brussels	Sprouts	Cabbages
Caniflowers	Carrots	Celery	Chervil	Caniflowers	Carrots	Celery	Chervil
Cucumbers	Endive	Eschalots	Fennel	Cucumbers	Endive	Eschalots	Fennel
Greens	Horseradish	Lettuce	Mint	Greens	Horseradish	Lettuce	Mint
Mushrooms	Onions	Parsley	Peas	Mushrooms	Onions	Parsley	Peas
Potatoes	Radishes	Rhubarb	Sage	Potatoes	Radishes	Rhubarb	Sage
Scarlet Runners	Seakale	Sorrel	Spinach	Scarlet Runners	Seakale	Sorrel	Spinach
Tarragon	Thyme	Turnips	Apples	Tarragon	Thyme	Turnips	Apples
Apricots	Cherries	Currants, B	" Red	Apricots	Cherries	Currants, B	" Red
" White	Figs	Gooseberries	Grapes	" White	Figs	Gooseberries	Grapes
Melons	Nectarines	Peaches	Pears	Melons	Nectarines	Peaches	Pears
Pine-apples	Plums	Raspberries	Strawberries	Pine-apples	Plums	Raspberries	Strawberries
£				£			

Advantage of Cutting the Haulm off Potatoes.—In Mr. Jessop's market garden at Chiswick, is a large plantation of Dalmahoy Potatoes, planted in drills 2½ feet apart, and 18 inches between the sets in the row. Some of these Potatoes were lifted in our presence, and not a vestige of disease appeared; on the contrary, the crop was an exceedingly prolific one, and the tubers large and fine. The immunity from disease is thus accounted for. On the 1st of July last, a man cut off all the haulm with a scythe about 15 inches above the ground. In this would certainly appear to lie the secret of success; for other fields in the same vicinity, on which no such means were adopted, are all suffering from disease more or less.

Vegetables in Hop Gardens.—It is well known in the south-east of England that Hops are planted in rows, the hillocks being usually 6 feet apart; and that, as they do not bear a crop worth picking until the third year, it is customary to grow Beans or some other vegetable between the rows during the first year, and in some places during the second year also, so that the land should give some little return, instead of being profitless for those two years. I was lately passing across a Hop ground, in which the Hops had just been picked, and I noticed in one field that the hillocks of Hops had been planted at the usual distance from each other, but that the rows were 12 instead of 6 feet apart, and that the intervening ground was occupied either by Cucumbers, or by a double row of Brussels Sprouts, or by three rows of Strawberries. We all know how uncertain is the crop of Hops, and that a partial or complete failure of the Hop crop is by no means uncommon. Therefore I could not help thinking that this conversion of one-half of the Hop garden into a vegetable garden was a wise and prudent arrangement for securing a certain return from the land every year.—W. T. P.

THE VILLA D'ESTE AND ITS GARDENS AT TIVOLI.

BY NOEL HUMPHREYS.

THE great Italian villas of the suburbs of Rome and of the slopes of the rocky hills which enclose the Campagna to the south and east afford so many lessons in the highest class of gardening, namely, that section of the horticultural art which seeks to blend the effects produced by palatial architecture with those of its immediately surrounding scenery, that a careful study of the means, false or true, which have been employed by men of art for this purpose cannot but be instructive to the student of the noble profession of horticulture. The villas which occupy the most commanding sites near the picturesque mountain towns of Tivoli and Frascati

at once asserts its claim to the beauties of position and scenery which have made its name so famous; and one does not wonder that it was a spot so loved by the patricians and poets, and rich plebeians of ancient Rome; as is proved by the remains of the magnificent villas which they caused to be constructed along the ridges of those lovely hills. The architects of the later years of the great Republic and the first of the still mightier Empire vied with each other in taking full advantage of the glorious sites which the northern and western slopes of this picturesque offshoot of the Apennines afforded them. The beautiful ruins, more or less perfect and extensive, of the (so-called) country houses of Mæcenas, Cassius, and Cicero, of the Villas Claudia, Flaminia, Gabina, Vitellia, and the later and more magnificent structures raised by the Emperor



Villa D'Este and its Gardens at Tivoli.

are nearly all laid out upon a scale of extraordinary grandeur. The name of Tivoli has, however, been so sadly vulgarised by its adoption as the title of suburban tea-gardens (supposed to be picturesque) that its soft southern sound no longer conveys an impression of wild-mountain loveliness to the mind; so completely has the idea of the Tivoli tea-gardens of London, Margate, Ramsgate, Hastings, and a host of other places rendered the name suggestive of anything rather than that of the curiously picturesque old rock-seated town of the Sabine hills. But, actually seen by the travelling student, with its exquisite surroundings of wood and rock and cascade, and its noble view over the Campagna, with the dome-crowned mass of modern Rome exhibiting its blue outline on the horizon, it

Hadrian show that those architects of antiquity fully understood the art of selecting a picturesque site for a country palace with consummate taste and judgment, a selection in which the landscape gardener ought always to be consulted.

Among the villas which modern architects have erected along these lovely mountain terraces—terraces, in many cases, prepared ready to their hands by their ancient predecessors—and from which the architectural structures had crumbled away—the Villa Falconieri is one of the oldest and consequently one of the most interesting. Just as the cultivated and luxurious monks were among the first to select the most lovely spots in the green vales of England for the erection of

their monasteries, so the great churchmen of Rome were among the foremost, in modern times, to appreciate the beauties of the Sabine hills, which Horace loved, and where he niched the snug sunny farm which is still so perfect in his undying verse, though not a brick or stone of it remains erect, and even its site is doubtful. Lovers of gardens and gardening cannot but take an interest in scenes which have more or less directly led to a love of nature's beauties during so many ages; and, seeing with what refined taste the scenery about the residences of our present race of clergymen (however unpropitious) is always made the most of, will not be surprised to find that the good Bishop of Ruffini, under whose auspices the Villa Falconieri was originally constructed, created almost an earthly Paradise out of the rich scenic materials that were awaiting the hand of art to train their native wildness into suitable form, as surroundings to the mountain palace that rose, as by enchantment, in their midst. In 1548, when the villa was built, art was made to predominate far too greatly, and that nature was overshorn and clipped rather too severely, was a necessary result of the taste of the day, and not altogether the fault of the good bishop or his architect; yet it must be admitted that, even with these drawbacks, the Villa Falconieri was, and is, a very charming place; and the careful student who visits the great villa region of Frascati and Tivoli will discover that these faults are much more offensively predominant in the subsequent construction of the Villas Aldobrandini, Mondragone, and others in that picturesque neighbourhood; not excepting the Villa d'Este, represented in the annexed woodcut, which was erected by another great churchman, the celebrated Cardinal d'Este, of the noble Ferrarese family of d'Este, who were the remote ancestors of the Brunswick family and the royal family of England. The structure of the Villa d'Este was commenced in the year 1549, only one year after the Bishop of Ruffini had laid the first stone of the Villa Ruffi, now called the Villa Falconieri. The architect employed by the Cardinal, whose family had been patrons of poets and architects from the first years of its greatness, was the celebrated Pirro Ligorio, one of those artists of universal genius of the sixteenth and seventeenth centuries, who was at once painter, architect, sculptor, an antiquarian, and a voluminous author. Ligorio was at the same time a fashionable and successful constructor of gardens, and an associate of Michael Angelo's in the finishing of St. Peter's, being also employed in many other important works; the erection of the Villa d'Este for one of the princes of Ferrara, who had long been his patrons, being, in fact, only a plaything in comparison with his more extensive undertakings.

The mistaken feeling that nature must be utterly subdued before art could be fitly displayed, was one of the vicious principles in the canons of art that prevailed, not only long before the time of Pirro Ligorio, but also long afterwards, so that he cannot be very severely called to account for practising a system by means of which many pleasing and grand effects have been created, which doubtless have their merit, as productive of a certain class of beauties, which, however, have never been of the highest or purest kind. It was from such models that the Le Notres and Le Pautres who constructed the artificial garden scenery of Versailles drew their inspirations, which were unfortunately in the direction of a still further departure from nature than that which had been perpetrated by their predecessors among the exquisitely beautiful natural scenes of the Sabine hills. In the architectural decorations of the gardens of the Villa d'Este, Pirro Ligorio was extremely profuse and formal, as well as in his topiarian feats of clipping and shearing; for in the first department his balustrades and steps and vases are far too obtrusive in their abundance; and in the second, the squaring up, by the shears, of the beautiful natural forms of trees, and the execution of endless sentences, appropriate or inappropriate, in the shape of box edgings, was another result of his excess of zeal for the artificial. Still, he had much taste of a grandiose character; and even if he had not possessed that first of artistic gifts, he could scarcely have spoiled such a site as that of the Villa d'Este, so long as the decorative features, good or bad, were on a sufficiently large scale not to appear mean in the midst of scenery possessing such largeness and boldness of character. No art, however injudiciously

applied, could spoil the noble view towards Rome from the terraces, which at the hour of sunset could scarcely be matched in Europe for beauty. That exquisite feature, too, in Italian scenery—the peculiar growth of the Stone Pine—is one that does not admit of cropping; and its presence in the gardens of the Villa d'Este, as shown among the prevailing formalities in our engraving, produces the most charming effect in the midst of the excess of architecture and sculpture with which it is associated. The Cypress, too, uncropped, always adds to the beauty of any Italian scene in which it occurs; while the noble character and massive grandeur exhibited by the Nexas of the Villa d'Este form another most attractive feature in the general aspect of this magnificent palace-villa. We at once perceive the genius of Ligorio in allying these picturesque natural forms with the formalisms of architectural composition; and their felicitous placing, as shown in our engraving, is worthy of the most careful appreciation of the young student in the art of landscape gardening.

“PURPUREOS SPARGAM FLORES.”

THE wreath that star-crowned Shelley gave
Is lying on thy Roman grave,
Yet on its turf young April sees
Her store of slender Violets;
Though all the Gods their garlands shower
I too may bring one purple flower.
—Alas! what blossom shall I bring,
That opens in my Northern spring?
The garden beds have all run wild,
So trim when I was yet a child;
Flat plantains and unseemly stalks
Have crept across the gravel walks;
The vines are dead, long, long ago;
The Almond buds no longer blow;
No more upon its mound I see
The azure, plume-bound fleur-de-lis;
Where once the Tulips used to show,
In straggling tufts the Pansies grow;
The grass has quenched my white-rayed gem,
The flowering “Star of Bethlehem,”
Though its long blade of glossy green
And pallid stripe may still be seen.
Nature, who treads her nobles down,
And gives their birthright to the clown,
Has sown her base-born weedy things
Above the garden's queens and kings.
—Yet one sweet flower of ancient race
Springs in the old familiar place.
When snows were melting down the vale,
And Earth unlaced her icy mail,
And March his stormy trumpet blew,
And tender green came peeping through,
I loved the earliest one to seek
That broke the soil with emerald beak,
And watch the trembling bells so blue
Spread on the column as it grew.
Meek child of earth! thou wilt not shame
The sweet, dead poet's holy name;
The God of music gave thee birth,
Called from the crimson-spotted earth;
Where, sobbing his young life away,
His own fair Hyacinth lay.
—The Hyacinth my garden gave
Shall lie upon that Roman grave!

O. W. HOLMES (*after a Lecture on Keats*).

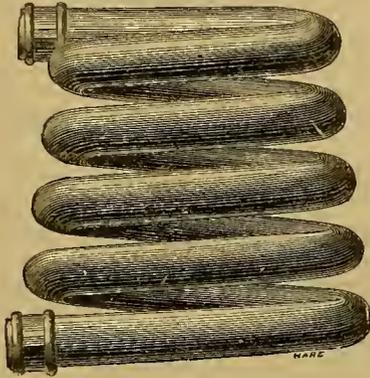
NEW PATENTS.

Instrument for Rooting up Weeds (Dated January 31, 1872), J. Knowles, Eagley Bank, Bolton, Lancashire.—A pair of pointed levers joined to a stud, and connected to handles. To the stock is fixed a block which serves as a fulcrum, on pressing down the handles, to raise the weed out of the ground.

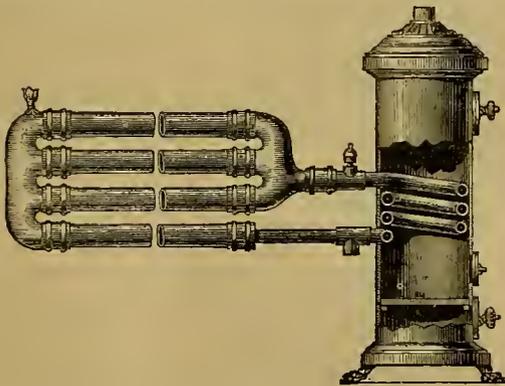
J. Sunley, Leeds, Yorkshire, has patented an apparatus for cutting the edges of grass lawns, and for collecting the grass. It consists of a star-shaped revolving cutter with both opposite sets of edges sharpened. When one set is blunt the cutter may be reversed. It is driven by gearing from a wheel on the travelling drum spindle, and its rear part runs in a half circular casing, to which a stationary cutter is attached. To the centres of the cutter blades are fastened spade-shaped delivery blades, which throw the cut grass into a box in front. A guide is placed in front of the revolving cutter, which, together with the travelling drum, can be adjusted vertically.

DEARDS'S PATENT CENTRIFUGAL HEATING APPARATUS.

Among the numerous boilers exhibited at the Birmingham show, the subject of our notice received the distinction of a bronze medal as the award of the judges. Its inventor, Mr. S. Deards, of Harlow, Essex, claims for it a superiority over other forms of tubular boilers in its self-cleansing qualities, combined with a more perfect circulation, the water space of the boiler consisting of one continuous coil of pipe which completely surrounds the fire. The larger sizes, which are



made in pipe of 2 inches, 3 inches, or 4 inches in diameter, are fixed in brick-work, and the flues being brought to play a second time upon the outer surface of the coil, the greatest possible heating power is secured without delay; while by a proper arrangement of the dampers, the heat may be sustained for a long time at the lowest possible cost for consumption of fuel. One of these large-sized boilers, to heat 1000 feet of 4-in. pipe, at the recent trial at Birmingham, went fifteen hours without attention, and, though subjected to the open air, and exposed to showers of rain, only lost 20° of heat during the whole time. The same principle can be applied to any slow combustion stove suitable for a small conservatory or



greenhouse. Mr. Deards informs us that "with a small slow combustion stove, consuming one bushel of coke or cinders and keeping heat in 100 or 150 feet of hot-water pipe, the cost for fuel will not exceed fourpence per day," the stove burning from eight to twelve hours without attention. We shall be glad to receive reports of the working of this boiler from any of our readers who have made trial of it. To ourselves it appears to be as sound in principle as it is simple in construction.

A HOP GARDEN.

A most beautiful spectacle is presented by a Kentish Hop-garden in September. No artist would hesitate for a moment to rank a healthy and well-furnished plantation just before picking time with the very loveliest pictures of the vegetable kingdom. True, one does not eat Hops; and the proud Grape, at once a delicious fruit and the "mother of rosy wine," has an immense advantage over its English rival. Still, plant for plant, a garden of "Goldings," when the lush bine has suffered nothing from "fly" or "fire-blast," but has

grown green and strong and gallant past the dread season of St. James' Day, is more picturesque and richer in landscape effect than the most famous French vineyards. The low-growing wine fields of the Côte d'Or must not indeed be mentioned in comparison with these noble "bines," swaying their thick heads of dark green leaves starred with pale-green fruitage, which softens to a golden russet when the time draws nigh for picking. Even when the Grapes hang thickest upon the stumpy vine-bushes of southern France, the *coup d'œil* is nothing. You used to think of blood-red Beaune and perfumed Château d'Yquem, to call up any genuine admiration of the sight; but the long green alleys of our English Hop-gardens, with waving tendrils and tossing wealth of foliage and Hops, are really fine in themselves. Not even the festooned vineyards of Italy, when the Grapes run in loaded strings of emerald and purple from tree to tree, or else spread in lovely scroll-work of Nature with bunch and berry and soft verdant sprays over the raised trellises, are a jot prettier than a Hop-ground at its best. It would be difficult, indeed, to match the luxuriance and perfection of such a picture, unless we go to tropical crops—and even here comparison is difficult. Cotton-fields are decidedly ugly; tea and coffee are both as plain in appearance, except at flowering time, as Currants and Gooseberries; while the Sugar Cane and Maize, though massive, are rugged and irregular. A field of the Opium-Poppy in full blossom, no doubt, or the great Anatolian plains about Trebizonde, covered with Musk Roses, must bear the Palm away from the Hop-plant; but then again, the Rose has all the advantage of endless poetry to make up for her low stature, and if Saadi and Hafiz had written odes to the Hop, it may be doubted whether people would not envy and imitate the pickers who go down every autumn to gather in this "brewer's Grape."—*Morning Paper.*

THE FRUIT GARDEN.

THE VINE IN THE OPEN AIR.

(Continued from p. 274.)

SOILS.

NEXT to the most favourable aspects are the most suitable conditions earthward, or the selection of the most congenial soil for the vine. By way of encouragement, let me state at the outset that the vine is by no means so fastidious about soil as many cultivators have supposed. Does any one ask for proof, here it is. The vine has grown tolerably well in all earths, from clay to peat, from sheer driven sand to carrion. Still there is no doubt that turfy loam, cut from three to four inches thick from an old sheep walk on the face of an elevated rocky surface, sweet and full of fibre, is the model soil for the growth of vines or any other fruit trees. But it is scarce, and dear to the majority of cultivators, and wholly beyond the reach of others. A very good soil of the same type may often be scraped up by the sides of roads, borders of commons, and near new buildings, and in some neighbourhoods a load of good loam may be bought for a mere trifle. A very sandy loam should not be chosen, as it is soon exhausted; a stiff loam is preferable, provided it is full of fibre. The roots of the grass will balk its cohesive properties, which may be still further neutralised by the addition of road scrapings, charred garden refuse, turf, crushed bones, lumps of freestone, old mortar, plaster well stocked with hair, and brick-bats. With a full admixture of such hard imperishable non-adhesive matters, there will be little fear of the vine border getting too firmly bound together.

BORDERS.

The chief point is to see that the bottom is dry and the border sweet. From eighteen inches to thirty inches should be a maximum depth for vine borders out of doors. In deep borders the vines will find an excess of food and water, and consequently send forth gross wood beyond the power and time of our comparatively sunless summers to ripen. This would prove fatal to success. Moderate growth and early and perfect maturity are the beginning, ending, and secret of success in grape culture in the open air. To ensure these the border must be sweet and dry; no water must rest in or near to it. It ought likewise, where there is any great depth of soil or subsoil, to be rendered impervious at the bottom. A small block of concrete, slate, or paving-stone is the readiest means of making it so. If a yard under the vine is thus paved, it will mostly suffice to shoot the roots over the border horizontally, or the entire bottom may be paved or cemented. Borders may vary in width from a yard to four, five, or ten feet, according to the length and height of the wall to be covered, the size of the plant to be grown, &c. Narrow or wide they ought never to be cropped with aught else, as the digging of vine borders destroys the best roots, and sends those that escape down into the worst places, and where the worst food is to be found. Finally, give the border a fall to the sunniest side, that it may arrest and absorb

some of the sun's rays. The importance of this can hardly be over-estimated, for as is the warmth of the borders, so, to a great extent will be the weight and quality of the fruit gathered. Perhaps hardly a better site can be found than the southern slope of a railway cutting. There would be no danger of excessive growth on such a denuded site, while a sufficiency of nutriment could be provided by adding some rich soil, or by frequent delinquings with sewage. There could hardly be a more poetical solution of the great sewage difficulty, nor withal a more practical one, than its conversion thus into grapes or wine. Breaks could readily be introduced in the cuttings in the form of hedges or narrow belts of thorn, arborvitæ, spruce, large privet, or other plants to arrest the wind or pitch it over the heads of the vines. The south fronts of natural and easily accessible rocks, the warm sides of hills and rolling valleys are other suitable positions. The branches love to hug hot stones and the roots to bore away and pick up scanty but wholesome food amid the *débris* of rocks. Old chalk pits, stone pits, and quarries should be pressed into the service of vine-growing. Many such waste places abound in cosy nooks and corners, into which cold winds or sharp frosts hardly ever enter. But those who have no such exceptional wastes to wreath with beauty need not despair of growing good grapes in the open air on any warm site or dry bottom, while few better places can be found for ripening good grapes than the southern front or gable-end (with a chimney in it) of a cottage or dwelling-house.

VARIETIES.

Too much care can hardly be exercised in the selection of varieties. Beware of mere collections. One sort that thrives in the neighbourhood is preferable to a dozen that do not. The Royal Muscadine, Grove-end, and Buckland Sweetwater, and, hardier than either, the Pit-maston White Cluster, are the most useful white grapes for out of doors. The White and Grizzly Frontignans also ripen well on sheltered walls, and are not given to shanking out of doors. Their flavour, as everyone knows, is beyond praise. Foster's White Seedling is another excellent early grape, with a bunch larger than, and a berry almost as large as the Sweetwater, while the flavour is about on a level with the Muscadine at its best. This is a grand showy grape on a warm wall. The Parsley-leaved or Ciotat takes less space than most others; the leaves are beautifully and deeply cut; it is a sure and heavy cropper, and its fruit is as near as possible of the same quality as the common or Royal Muscadine. More fruit may be gathered from a given area by growing this variety than any other. The early Malingre is another very early white grape of good quality. Of black grapes one of the earliest and hardiest is the Medoc, a small round-berried grape. The best of all is probably the Esperione, a very hardy free-bearing variety of excellent quality and large bunch and berry. The Cambridge Botanic Garden is another first-rate grape, equally hardy, juicy, and sweet, but with a much shorter bunch. Ingram's Prolific Muscat and Mrs. Pince have both done remarkably well out of doors in some localities, and the quality, especially of the latter, when well ripened, is most excellent. Trent-ham Black is also an extraordinarily free bearer out of doors, with good-sized oval-berried grapes of excellent quality. The Black Frontignan is as hardy, free-bearing, and good in every respect as either the White or Grizzly. Again, all the varieties of Black Ham-burgh ripen usually on warm walls in favourable seasons in warm localities under good management, and are worth a trial on southerly walls. Late grapes, such as Alicante and Lady Downes' Seedling, may be ripened under ground-vineries or Rendle's plant protectors, but hardly on the open walls, excepting in positions unusually favourable. On the contrary, the Black Prince and West's St. Peter's ripen nearly as well as Ham-burghs. There is often a great loss incurred by the growth of inferior varieties in first-rate positions. It is no uncommon thing to find the warmest gable-end of houses and the best south walls furnished with such varieties as the Black Cluster, Burgundy, Claret, and a white variety resembling the Black Cluster, while they would ripen such as are here specified equally well. This growth of varieties comparatively worthless for eating is one of the reasons why the culture of out-of-door grapes has been so much neglected of late years. The size and quality of grapes grown in vineries have been developed to the very uttermost, while the same inferior varieties have been grown on walls, and no means, such as careful thinning and superior culture, used to improve them. While the larger and better sorts should be grown for dessert, where climate and other cultural conditions are favourable, it by no means follows that they are the best for wine-making. For the latter purpose, as well as for growing on the ground and in open quarters, no better selection could probably be made than the Black Cluster, Miller's Burgundy, Claret, Sweetwater, and Muscadine. Where one only can be grown, it ought to be Muscadine, or, if in the open quarters, the White Cluster. The Sweetwater ripens in from a month to six weeks less time than any other grape, and forms a noble bunch with large berries. As a proof of its excellence, and also as a caution,

it may be stated that wasps, flies, and birds are more attached to it than any other grape whatever. Chasselas Musqué is another white grape of excellent quality, and an early ripener; it does well on a warm wall.—CHASSELAS.

(To be continued.)

Barren Fig Trees.—Will you oblige me with information upon the following point? I have a large sized Fig tree planted against a south wall that has not borne any fruit for several years. Early this year I had it well pruned and tied up, in the hope of having better results. I watched it very attentively during the months of June, July, and August without seeing any fruit, except here and there an odd one, to my great annoyance. During the last week I found small fruits appearing upon every branch, but too late for any crop this year. What am I to do? How can I save them for next year's crop?—H. B., *Bowdon*. [The pruning has probably been the cause of failure, *i.e.*, cutting the wood away that carried the small fruit in embryo formed last autumn, and which, if it survived the winter, would have come to maturity this season. A plan frequently practised in the north of England is to unfasten the tree from the wall before the advent of severe frost, then to tie the branches quite straight in some three or four bundles about the bulk of an ordinary birch-broom, covering each bundle with 3 inches of clean long straw secured by means of tarred twine, and then placing some straw shutters in front of the tree so treated, to keep the straw in which the branches are surrounded free from wet, otherwise during severe frost the straw in a wet state would freeze, placing the branches in a worse position than if fully exposed. Before growth commences in the spring the straw must be removed, and the tree restrained on the wall. During dry weather in summer Fig trees must never be allowed to suffer from want of water].

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

The Fruit of Tacsonia Van Volxemi.—Will some of your readers kindly tell me if the fruit of this fine Passion Flower is edible?—C. F. W.

Large Melons.—Four Melons were raised in Hanover county, Virginia, this season, the average weight of which was 180 lbs. They were of the Johnston variety, and were sent to New York.

Apple Bloom and Fruit at the same time.—Some Apple trees frequently produce a few flowers about the time the fruit is ripe. There is one at Botesford Moors, on which I think I have seen one or two flowers every autumn for these last thirty years.—E. PEACOCK, *Brigg, in Notes and Queries*.

New Material for Tying up Fruit Trees.—The Pomological Institute of Reutlingen (Germany) offers for sale strips of tape prepared with India-rubber, which are said to be very serviceable and durable for this purpose. These strips are 2½ feet long, and about ¼ inch wide, and are sold at the rate of 2½d. per 100.

Fruit in Germany.—A correspondent, writing from Frankfort, says, "I saw, in one of the *Brighton Herald's*, that there is a great scarcity of fruit in England. Here it is more than abundant, and the Potatoes are without disease. Surely arrangements might be made to import some. The fruit is in such quantities that it is unsaleable." [If Peaches can be sent from New York, surely Apples and Pears and Plums might be transmitted to England from Frankfort.]

THE ARBORETUM.

TREES IN AMERICA.

We are glad to say that the great importance of planting the many treeless districts in America is beginning to receive due attention. At a meeting of the Kansas Horticultural Society, the committee on Forest Tree Culture submitted the following resolutions, which were adopted:—"1. That the rapid increase of population in the United States and the multiplication of industries all require an immense consumption of timber, and foretell the exhaustion of the forests within a comparatively brief period. 2. That the State of Kansas having only about five per cent. of her area in woods, and being exposed in her extended surface to the sweeping winds of elevated plains, has a peculiar interest in the subject of forest tree culture, in groves and wind-breaks, and not only for the supply of fuel and timber, but also for the amelioration of climate. 3. That our Senators and Representatives in the Congress of the United States be respectfully requested to bring before their bodies the importance of some appropriate action to encourage the growth of forest trees on the western plains. 4. That we respectfully call the attention of the farmers of Kansas to the fact that the deciduous trees native to the State are not only of species valuable on the farm and in the arts, but are of easy propagation by seeds and cuttings, and we recommend that their seeds be gathered and cuttings made and planted as the cheapest mode by which large tracts can be set in timber. 5. That in order to extend the planting of coniferous and evergreen trees in shelter belts and in forests for the production of timber, we recommend that action be taken by the Legislature of

Kansas to provide special encouragement by premiums, by exemption from taxation, or by the establishment of State nurseries for free distribution of such trees to farmers desiring to plant the same."

Another Western committee adopted the following three sensible resolves:—"1. That we recommend farmers throughout the United States to plant with trees their hilly or other waste lands, and at least ten per cent. of their farms with trees, in such a manner as to provide shelter belts or clumps and rapid growing and useful timber. 2. That we solicit the Legislatures of the several States to pass laws providing bounties for planting useful trees, encouraging the planting of the highways, and for the provision of State nurseries of young timber trees; and also the appointment of an arbor day for the annual planting of trees, as has already been done in the State of Nebraska. 3. That we ask our Congress of the United States to require, so far as practicable, that hereafter railroad companies and settlers receiving the benefits of the Homestead and other Acts donating lands shall plant with timber trees one-tenth of the lands so donated."

HARDY TREES AND SHRUBS.

BY GEORGE GORDON, A.L.S.
THE UMBRELLA PINE
(*SCIADOPITYS VERTICILLATA*).

THIS forms a pyramidal tree from 70 to 100 feet high, thickly clothed with horizontal spreading branches to near the ground, and has a stem 10 feet in girth at 3 feet from the ground. The Japanese, however, have several varieties of it, some among which are only dwarf bushes, while others are variegated or have leaves varying in breadth, and from 2 to 4 inches in length. The Umbrella Pine appears to be perfectly hardy in England, but it is a tree of slow growth; it was first introduced in 1861. Dr. Siebold considers it the finest Conifer of Japan, and one which presents an appearance as strange as elegant, in consequence of its innumerable ramifications, which always end in a parasol-like tuft of leaves. The latter are all linear, a little sickle-shaped, blunt or slightly notched at the points, leathery in texture, double-ribbed, with a shallow channel running through them on the underside, and so closely clustered alternately together as to look as if they stood in whorls of from 30 to 40 at the ends of the branches; they are of a yellowish-green when young, but afterwards of a deep green, and remain on the tree for about three years, by which time each branch has from one to three whorls on it, according to its age, but on the fourth year they fall off. The branches are mostly in whorls, with the young shoots cylindrical and without leaves, except towards the top. The flowers are monoecious, or male and female on the same plant, but separate. The male blossoms being terminal and somewhat globose, and the female ones solitary and growing from among the scaly buds. The cones are elliptic or cylindrical, obtuse at the ends, from 2½ to 3 inches in length, and 1½ inch in diameter. The scales are regularly imbricated and rather thin, with the bracts shorter than the scales.

Influence of Forests on Rainfall and Watercourses.—In a paper on "Forests as Influencing Climate" by M. G. Lemoine, we meet with the following remarks:—"The question of the action of forests on the climate of a country must be admitted to be an extremely difficult one. In the basin of the Seine it had been established that, compared with soil covered with grass, or even with other permanent cultivation, forests had no special influence on watercourses. The only absolutely certain action of forests was their influence in protecting the soil and preventing it from being carried away; but from this single fact it followed that in mountainous countries they

would retard the flow of torrential water. In the Department of the Hautes Alpes the presence of forest vegetation prevented the formation of torrents; re-planting woods led to the drying up of torrents already formed; but in most cases turfing alone was sufficient to produce the same effect. These conclusions must be carefully limited to the countries in which they had been obtained; but they showed at once the weakness and power of man. He acted on the soil, he dried up torrents; but the great general phenomena of the atmosphere, the great streams of air which determined the climate of a country, were beyond his reach."

Surface Dressing for Conifers.—Can you tell me what is the best surface dressing to apply to Conifers, such as Douglas Fir, Pinus insignis, and P. Benthamiana, &c.? I have had different kinds planted here last autumn in heavy clay soil, to which has been added a good deal of peat. I see by THE GARDEN that Mr. Frost has experienced good results from surface dressing Conifers at Dropmore, and I should like to give mine equal advantages. — A SUBSCRIBER, Rathowen, Ireland. [Mr. Frost uses for surface dressings any kind of waste soil, refuse, garden sweepings, or similar material, but he finds good loam best for Conifers on light soil, which is what he has to deal with. Such dressings must not be put too near the trunks of the trees, which at Dropmore are all on gently raised mounds, giving each tree five feet, or even more, of depth for the tap-roots to run into. Thus raised they require top dressing more than trees planted on the level surface. If your trees are not on mounds they will require little top-dressing in your heavy soil.]



Umbrella Pine. (After Fortune.)

Australian Trees in California.—Australian forest trees propagated from seed, with perhaps a few exceptions, thrive remarkably well in California. In and around San Francisco, in the neighbouring city

of Oakland and adjoining towns on the easterly side of San Francisco Bay, fine specimens of many of these are exceedingly numerous. The most popular belonging to the genera Acacia and Eucalyptus, have been planted for ornamental and shade purposes; the light feathery fern-like foliage of some of the Acacias, their gracefulness, beauty and colour, combined with rapid growth, present so many advantages as to fairly entitle them to popular esteem.

The Double Pomegranate (*Punica Granatum*).—This is a favourite plant in the United States; its lovely blossoms of all shades of colour, from salmon pink to rich scarlet, making it a desirable addition to decorative plants during the summer and autumn months. In the Northern States this is generally grown in tubs as standards, and wintered in a light cellar, free from frost.

GARDENING FOR OCTOBER.

THE INDOOR GARDEN.

BY T. BAINES, SOUTHGATE.

Conservatory.—There is no better time than the present for giving the inside of conservatories a thorough cleaning, as this can be done now before many things are brought in for the winter season, such as Camellias and other bulky plants not easily moved. A general cleaning of this description has the double advantage of much improving the appearance of the house and also is conducive to the health of the plants, through the maximum amount of light that it secures. As the plants are returned to their places, let each be well cleaned, as well as the pots and tubs or boxes they occupy, an operation which gives an air of order and cleanliness that goes a long way to compensate for a less display of flower than earlier in the season. Let all roof climbers have their heads reduced as far as desirable—consistent with the well-being of each individual plant; remembering that the more light admitted, through a free use of the knife, the greater benefit will be conferred upon the general occupants of the house; at the same time avoid formality. Attend well to Chrysanthemums; remove all suckers from the base of the plants, as these rob the flowering shoots; thin the flowers as soon as large enough to handle, bearing in mind that the more freely this is done the finer the flowers will be; see that they are quite free from aphides before they are got indoors, or they will suffer individually, as well as introduce the pest to the other occupants of the house. Keep a good look-out as to the weather, and do not allow these or other plants to stay out too long so as to be injured by frost. If not already done, it is now quite time to take up and pot Solanums that have been planted out for the summer; they should be potted in pots no larger than the roots can be got into without being injured; ordinary loam with the addition of a moderate quantity of sand will be found all that they require; pot firmly, and at once; give a good soaking with water, being careful that at no time they suffer from want of it, or they will lose their leaves, which renders them unsightly; they should be kept for three weeks or so closely shut up in deep frames, or in a small pit, until they have commenced to root, when they should be gradually inured to a drier atmosphere and more air. Primulas should now be removed from frames to a drier atmosphere, assisting them as they throw up their flowers with weak manure water. If any of last year's Primulas have been potted on for flowering, these will come in early, and should be encouraged by manure water, giving them plenty of air, and all the light possible, to keep them sturdy. Younger plants should have their flowers nipped out, which will strengthen them, and induce them to blossom late, when they will be found most useful. Cyclamens will now require attention to induce them to root and form leaves freely, as without these they will not blossom satisfactorily. These plants when in flower are frequently placed for appearance sake in situations far away from the glass, a condition under which they become so weakened as to be of little use. If they are expected to be grown as well as they are by those who cultivate them for the London markets, they must be similarly treated, especially as to light during autumn and winter; they must be kept close to the glass, free from insects, and be regularly attended to with water. The earliest batch of Cinerarias will now be throwing up flowers, and should have plenty of light and air, avoiding anything like dry currents. Keep the plants standing upon some damp material, such as a bed of ashes, otherwise if the atmosphere around them is at all dry, they will lose their bottom leaves, which very much destroys their beauty. They are better for some time yet in cold frames or shallow pits, provided care is taken not to have them exposed on frosty nights. Give all necessary attention to Poinsettias, Bouvardias, Euphorbias, and similar things intended for autumn and winter flowering, remembering that a limited number of plants well grown will be found much more satisfactory than attempting the cultivation of greater numbers, and doing none of them well. Attend also at once to the potting of the Hyacinths, Tulips, Narcissus, Crocuses, &c., that will be required during winter and spring. Any late-flowering Gladioluses that are only now throwing up their flower spikes will be found useful if taken up and potted, just as their first flowers commence to open, supplying them liberally with water. They will expand their flowers well in the conservatory.

Stove.—Shading may now be dispensed with, and still further reduce the moisture both in the atmosphere and at the roots, as plants generally will now be approaching the season of rest. Cut back Ixoras and Dipladenias, and keep them drier at the root until they have broken afresh. If any roof climbers are grown here, which in a stove properly so called never should be allowed, as, however beautiful they may be in themselves, they exclude light to an extent that renders it impossible to grow well the far greater

number of things which ought to be found occupying the body of the house, they should now be well cut back, keeping them dry, so as to discourage growth as much as possible.

Fern Houses.—The reduction in the atmospheric moisture recommended here for last month, with the decreasing warmth of the season, will have materially checked growth, and brought the plants into a favourable condition for a thorough cleansing, more especially from insects. Thrips, even with the greatest care, usually make their appearance. The plants, in their present state, are in the best condition to bear a good application of tobacco smoke, which ought to be repeated sufficiently often to destroy the young brood as soon as it comes to life. Remove all dead or unsightly fronds. See that the drainage of all plants in pots or tubs is in good order. Ferns are water-loving plants, and it sometimes happens that the quantity of water they receive has the effect of choking the drainage, more especially if worms have got possession of the ball; if the water when applied does not percolate freely, it is an indication that the drainage is defective; where such is the case, it must be remedied at once, or the roots will perish.

Azaleas.—Late blooming plants should by this time have thoroughly matured their wood, and should have abundance of air night and day, only closing the house when there is danger of frost. Complete whatever tying yet remains to be done. Any plants that are suffering from want of more pot-room may yet be potted, but great care must be taken to make the soil equally firm as the ball of the plant, and the watering of such plants through the winter must be done carefully, as, if the new soil gets too wet, the roots will not enter it.

Hard-wooded Plants.—These should at once be got into their winter quarters. Let the house they are to occupy receive a thorough cleaning before they are brought in, and place the plants in the best position as to light; give plenty of air, but even now, when little growth is in progress, avoid cold draughts by giving air at the side opposite to that from which the wind blows. Keep the atmosphere of the house as dry as possible by watering early in the day, and using every means to dry up all that is spilt, and that runs from the plants. Any plants in this department that stand so far in need of repotting that they are likely to start into growth weakly in the spring, had better be potted now. They should not, however, receive so large a shift as in spring, and they will not at this season require shading. Place them at one end of the house where they will receive for a few weeks considerably less air than is given to the general stock. Get the tying of all plants that require it as forward as time will permit. Even where plants are not required for exhibition, but simply for home decoration, it is necessary to tie them once in the year. The best resinous deal stakes (and none other should be used) rot in time, and in certain stages of decomposition are liable to the attacks of fungi, which afterwards infest every particle of woody matter that turfy peat more or less contains, rendering the whole mass of earth totally unfit for the well-being of the roots. From this will be seen the necessity of extracting from the soil the whole of each stick that has been inserted in it. Be careful that whatever material is used for tying, that with every ligature sufficient room is allowed for the natural thickening of the branch or stem. Be careful also that all old ligatures are removed, or they will effect similar injury.

Orchids.—In the East Indian house, many plants will yet be in active growth, but it is not advisable to keep so much atmospheric moisture as earlier in the season, when the drying influences of more sun and longer days demand it. Any houses that are not very light will not require shading much longer, and where such is the case it should be removed and stored away in its winter quarters. Do not give too much water to Calanthe vestita and Veitchii, now pushing up into flower, or all the leaves will decay before even the flowers begin to open. Dendrobiums, such as Devonianum, pulchellum, nobile, Pierardii, and others of similar character will now be about finishing their growth, and should gradually have water withheld from them, or they will commence growing afresh. When they have got quite dry remove them to a cooler situation than where they have been grown; the warmest position away from where air is admitted in a house where late Grapes are hanging will suit them. Such kinds as *D. densiflorum*, *Farmeri*, *Cambidgeanum*, and *albo-sanguineum* require similar treatment respecting water, but must not be submitted to so low a temperature during their season of rest. One of the most useful kinds is *D. moniliforme*; this will now be swelling its flower-buds, and must not be allowed to get dry at the root like the preceding, or it will not flower freely. By using a few plants of this variety and a succession of plants of *D. nobile* they may be had in flower for six or seven months; and either as decorative plants or for furnishing out flowers they are vastly superior to numbers of much more expensive plants, as, with the single exception of a bride's bouquet, I have never seen either

a vase of cut flowers or a bouquet that was not improved by their presence. Spring-flowering *Cattleyas* and *Lælias* that are about finishing their growth should receive little more water, and should be placed at the coolest end of the house. Autumn flowering *Lælias*, such as *Lælia anceps* and *autumnalis*, should now occupy the warmest end of the house, giving just sufficient water to keep their flower-stems now pushing in healthy growth.

Heaths.—Get them under cover at once. Look carefully over every plant to see that there is no mildew at work, or it will spread apace, disfiguring as well as materially injuring the plants. Now is a good time to pot any that require it, giving no side air opposite to where they stand for a few weeks. On no account place Heaths at any time too close, as crowding completely spoils them. Where the space available for their cultivation is limited, it is much better to limit the number grown than to crowd them together.

THE FLOWER GARDEN FOR OCTOBER.

BY GEORGE WESTLAND, WITLEY COURT.

THE cold wet nights which we have lately experienced have told perceptibly upon vegetation. The varied tints of rich colouring which many deciduous trees now assume contrast charmingly with the sombre green of the Pine tribe. Everything must be got in readiness to take up and house such plants as are likely to suffer from frost. Except in a few favoured localities the tenderer kinds of bedding plants have never for any length of time this season rewarded us with anything like a satisfactory display. Whereas the harder ones, and especially such as are grown for the beauty of their foliage, have never been seen in finer condition. The teachings of the season are therefore decidedly in favour of a more extended use of fine foliage plants. A bold effect may be obtained by a freer use of such hardy plants as the *Acers*, *Ailants*, and the *Sumach*. The latter when established should be annually cut down to the ground, which causes it to throw up every spring fine vigorous shoots. *Panlownia imperialis* is also one of the most effective plants which we possess when treated in the same way as the *Sumach*. A freer use, too, of both deciduous and evergreen plants in combination with more transient subjects I believe to be in accordance with sound taste. In terrace and geometrical flower gardens precise proportions must be preserved, therefore these foliage plants are not admissible to the same extent as in gardens laid out in a more natural style, where diversity of surface and irregular masses of graceful foliage serve to give relief to the groups of flowering plants. All tender subjects that are intended to be kept indoors over the winter should be taken up and potted before they are injured by frost. In lifting variegated-leaved *Geraniums*, be careful to preserve as many of the roots as possible by a little assistance from the spade. Straining the roots close to the stems is an injurious system which should be guarded against. Remove some of the foliage, cut back some of the longest roots and straggling shoots, and pot singly, using a sandy loam mixed with a little leaf soil. In rich stimulating soils they do not stand the winter so well as in a poorer compost. If potted firmly and plunged in bottom heat for a short time, they soon become established at the root, and afterwards may be placed in a cool airy pit. Quantity is not the point to be aimed at irrespective of accommodation, for one-third of the quantity of well grown plants produce a greater effect than three times the same quantity of spindly ones. When early bloom is desirable, lift a portion of the old plants of scarlet *Geraniums*, as they bloom earlier and much more freely than young plants. They can be wintered successfully in boxes, and maintained in a comparatively dry and dormant state during winter where frost is excluded. Dryness during the winter is the greatest means of success. They should be packed firmly into the boxes, and have the greater portion of their foliage removed. Where convenience will admit of starting the plants in heat, it is certainly the best plan. Amateurs who may be desirous of wintering *Verbenas* and such like bedding plants in cold frames or pits, will find it necessary to secure as dry an interior as possible, for without this success cannot be attained. Provide perfect drainage in the frames, over which place a layer of broken bricks or cinder ashes, then a boarded flooring or stage to stand the plants upon. The plants and cuttings must be well established and thoroughly hardened by freely exposing them as long and often as can be done with safety. Take advantage of bright mornings for watering, and then apply it sparingly, and remove the sashes for a short time, to dry the atmosphere. Lift and divide *Violas*. They will do well dibbled about 3 inches apart into a well drained border. *V. Perfection* is a free flowering and very effective variety, well deserving to be more cultivated than it is. Remove *Dahlias* as soon as the flowers and leaves are destroyed by frost.

As beds assume a ragged and withered look they should be cleared at once, and planted with bulbs and other plants for spring decora-

tion. Having previously decided as to the arrangements, the beds should be trenched over, and planted as they become vacant, adding fresh loam and rotten manure for *Hyacinths* and *Tulips*. *Hyacinths* for massing should consist of the pure coloured selfs, as they are the most effective plants; plant the bulbs from 3 to 4 inches deep, and 6 to 8 inches apart. I have grown excellent *Hyacinths* and *Tulips* by making the holes rather large, and dropping a handful of prepared rich soil under and over the roots. This mode I have practised in preference to rendering the beds too rich for general bedding stock, and it answers equally well. *Tulips* should be planted from 3 to 4 inches deep, and from 4 to 6 inches apart. Select brilliant and effective coloured *Anemones* and plant them as early as possible for spring-blooming in a thoroughly drained soil. They succeed well in a light sandy loam that is moderately rich, and should be planted from 5 to 6 inches apart. To form an effective edging of *Snowdrops* the first season, they should be planted in three or more rows an inch apart. They are most effective, however, when allowed to remain undisturbed for several years. *Crocuses* should be planted in lines 2 inches apart, and from 4 to 6 inches deep. If mice are troublesome, the latter is by no means too deep. They also bloom best when undisturbed for some years. The *Erythronium*, or *Dog's-tooth Violet*, should now be planted. This is a charmingly compact and effective little plant, with ornamental leaves, and grows best in a light, sandy soil. *Scillas* should not be overlooked amongst bulbs, especially *sibirica*, which is unequalled for its colour and effect in the flower garden. Its bright sky-blue flowers, within a marginal line of *Antennaria* or *Cerastium* are indeed very pretty. English and Spanish *Iris*es should be planted in any ordinary garden soil, where they can remain undisturbed for years. *Jonquils* and *Narcissi* should not be overlooked, as they are good border plants. The planting of bulbs and spring flowers should not be confined to the dressed gardens alone, but ought also to extend to the shrubbery and the natural wooded walks, where they are very attractive and enjoyable. In planting *Hyacinths* and *Tulips* in the flower garden, plant them a few inches farther apart and intersperse them with a carpet of the various subjects used for spring decoration. By doing this not only is the ground covered, but to a certain extent the roots and young growth are protected from the severity of the weather. Amongst the many subjects adapted for winter embellishment are many varieties of *Sedums*, *Saxifragas*, and *Sempervivums*, which, when planted in masses, are very effective.

Evergreen shrubs should now be lifted and transplanted as soon as possible, as the heat in the ground at this season will promote the formation of fresh roots, and they will establish themselves before winter, which is the great advantage of early autumn planting. It enables them to withstand, without being materially affected, the dry, searing influence of the next spring. Plant firmly, or give a little water to settle the soil about the roots after planting, but avoid saturating the soil too much about the roots at this season, as such would cool the soil and retard root formation. Deciduous trees and shrubs should not by any means be disturbed until the leaves have fallen, as they would be apt to shrivel. Turfing and other alterations on lawns may now be done, and frequently sweep and roll grass and gravel walks, keeping the grass closely cut, and everywhere preserve the utmost neatness and order.

Pits and Frames.—*Geraniums* may still be propagated if the stock is insufficient. For this purpose select strong firm cuttings, insert them in pots or pans, which plunge in bottom heat in pits or frames, when a free circulation of air can be given. *Calceolaria* cuttings may now be put in any time during the month; a cold frame is by far the best place for them. The frame should be upon a dry well-drained bottom. Raise the interior to within 18 inches of the glass with ashes, and put about 5 inches deep of sandy loam and leaf soil, add a little sand to the surface, beat down firmly, and dibble in short stout cuttings about 2 inches apart. Settle the soil about the cuttings with a little water, and shade from sunshine. Frost must be excluded by covering, but at all times they must be kept hardy by giving air at night to prevent drawing. The most tender sorts of *Carnations* and *Picotees*, and rooted late ones, should now be potted and plunged in cold frames, or they may be planted out into a frame 6 to 8 inches apart in a sandy loam and leaf soil. They root more densely and lift with better balls in spring, when wintered in a light soil, compared to what they would if wintered in a rich one. If *Violets* are not already placed under protection, no time should be lost in doing so. A rich friable loam is the most suitable soil for them. Add some decayed manure and leaf soil according to the texture of the soil. To ensure a more continuous bloom the compost should be heavy and compact rather than light. Place the frames upon a dry bottom and choose if possible a somewhat sheltered position. Insert the plants firmly in the soil to settle, and give a good watering from a fine rose. Fully expose them until they require protection from the severity of the weather,

and then upon all favourable occasions give a free circulation of air. Grow some of them in pots, as they are very useful for indoor purposes. A few plants placed upon the greenhouse stage will occupy but little space, and diffuse a most agreeable fragrance. Pansies should be planted in cold frames, so that they may be protected during severe weather. Hyacinths and such bulbs as were planted early should now be looked over. Remove such as are rooted, gradually expose them to light, and afterwards bring them forward in heat as required. Pot a succession of roots to take the place of those removed. Imported clumps of Lily of the Valley should be potted as soon as they are procurable; they generally flower better than English grown roots. Use a rather rich soil and pots that will barely contain the roots. It is a good plan to select well-matured crowns, and put from twenty to thirty of them thickly into pots. They force well, and each head may be depended upon for flower. *Spiraea japonica* is also a valuable plant for winter and spring forcing. Keep bedding stock fully exposed as long as the weather will permit, prepare frames for the protection of all but hardy plants, such as *Echeverias*, *Centaurea*, *Chrysanthemum frutescens*, *Gazanias*, *Antirrhinums*, &c., and have everything in readiness to afford protection from frost.

THE FRUIT GARDEN FOR OCTOBER.

BY WILLIAM TILLERY, WELBECK.

Outdoor Fruits.—We have lately had a period of very cold windy weather, to warn us that the reign of summer is nearly over. As from the middle till the end of October is the best time for planting hardy fruit trees, due preparations should now be made wherever fresh plantations are required. When trees are wanted from the nurseries, they should be selected at once, so as to get the pick of the different kinds; for those who defer planting till spring not only get inferior trees, but likewise plant them at the worst season. Having grown for the last three or four seasons small single cordons of Apples and Pears at the bottoms of south and west walls in vacant spaces, I can recommend all intending planters who have such advantages to try them. By far the finest specimens of Apples which I have this year are growing on these cordons, the variety being *Calville Blanc* grafted on the French stock. The severe frosts in the middle of May did not injure the blossoms in the least, being protected by the foliage of the wall trees above them, and plenty of fruit set, but they were thinned out to about a dozen or two on each tree. This valuable variety of Apple keeps till the very latest period, and when grown on a south wall is of a delicious flavour, melting in the mouth without any residue. Peaches, Nectarines, and Apricots on walls should now be looked over, and any rampant shoot nailed in, as the autumn gales which we are now experiencing will soon twist them off. The late sorts of Peaches on the walls will want daily attention in regard to gathering the fruit as it ripens. Pears ripening on walls will likewise want frequent gathering, as they are ripening very irregularly this year, and if the most forward for use are put into a warm dry place to ripen, the Peach season will thereby be prolonged. Strawberries in pots, placed in the open air, will now want attention, for the heavy autumn rains may drench them too much at the roots for healthy growth. Where plenty of frame or cold pit-room can be had they can be kept growing all through October, and will then form fine strong and fruitful crowns, by proper attention to airing and watering. This is the best time to make fresh plantations of Raspberries, and where the old fruiting canes have not been cut away this should now be done, and three or four of the strongest of the young shoots pruned and tied to the stakes.

Vineries.—The vines in the early house, if not pruned, should now be done as early as possible, if they are wanted to be started in November. After pruning let all the rough bark be rubbed or peeled off, and a dressing of the following mixture be applied with a brush, namely, four ounces of soft soap to a gallon of water, and as much sulphur and quicklime, with as little tobacco water as will bring the mixture to the consistency of thick paint. If some clay is used in the mixture it will lighten its colour, and cool it, making it safer for use on the young shoots of Peach trees in the Peach-houses, when they are dressed with it. Before the cold rains or snow fall on the outside borders of the vineries intended to be forced early, some kind of covering materials ought to be in readiness to put on them. Late Grapes this year are rather backward in colouring, a circumstance partly owing to so much wet and want of sunshine during the summer months. Plenty of fire-heat will therefore be required, should October be dull and cold, to get them thoroughly ripened before the end of the month, and this will help their keeping qualities. This season has taught me that well-drained and well aerated vine borders are not as a rule watered enough in dry warm summers. In a very large vinery here planted principally with Muscats, the outside border is well-drained and aerated, and the

heavy rains in May, June, and July drenched it thoroughly, but I never had the Grapes better swelled and coloured than they are at the present time. Where new vine borders are intended to be made next spring, this is a good time to get some turfy loam stacked up for the purpose, if it can be procured either from a pasture-field or from the road-side or commons. The late Mr. Dowding, of Oakhill, a celebrated Grape grower in his day, had the turfy soil intended for his vine borders put into ridges in a field where sheep were pastured, and had the ridges frequently turned during frosts in the winter months. No manure of any kind was mixed with this soil, and the Black Hamburg Grapes he grew at Oakhill have never been excelled since. This shows that using nitrogenous or any other rich artificial manures in vine borders is only money thrown away, for with the exception of a little bone-dust in the soil when the vines are first planted, nothing more is wanted but attention to grow the very best Grapes. The great secret in keeping at the very top of the tree in showing fine Grapes, is the making of fresh borders, or frequently renewing them when exhausted, and in large gardens with plenty of vineries this can be done without interfering with the succession.

Peach Houses.—The trees in the early Peach house will now want pruning; but if properly disbudded and thinned in the spring, little pruning will now be required. All the ties of last season must be removed, and the trees dressed with the mixture recommended for vines; only put more clay and water in it to cool it, for fear of injuring the bark of the young shoots. The trees should be looked over twice, to see that no crevice or portion of the bark has been missed with the mixture, which acts as a great preventive against mildew, the brown scale, red spider, and aphid. Should any of the trees want renewing, no time should now be lost in replanting fresh ones, which, if selected from some of the later houses or walls, should be carefully lifted by preserving all the roots and fibres possible. In the late succession Peach houses, a good brush of a broom now and then over the leaves will displace all the ripest, and help to let the air and sun in to ripen the wood.

Figs.—The second crop of fruit will now be nearly over, and the trees in the borders and plants in pots will want putting into a state of rest by keeping the house dry and cool and giving abundance of air.

Melons and Cucumbers.—The late crop of Melons will now want abundance of artificial heat to ripen their fruit. Water must now be given sparingly at the roots for the production of flavour, and if the foliage can be kept free from insects it will likewise tend to the same result. Melons grown in dang frames or pits will now be nearly over, and therefore will want little more attention for the season. The Cucumber plants intended to supply fruit in the winter should now be strong and healthy, if they have been planted out in the pit or house in September. If the pit is properly heated with hot-water pipes, both for bottom and top heat, there is little difficulty in having a good supply of fruit all through the winter. The principal point is to have strong healthy plants to commence with, keeping the foliage free from insects, and not allowing the plants to carry too many fruits at a time. The large show varieties of Cucumbers are unfitted for winter fruiting, and the true *Sion House*, *Rollisson's Telegraph*, and other seedling varieties raised from them, are the best for the purpose. I have a sort named *Hollah's Seedling* which I have grown for the last two winters, and find it unsurpassed for productiveness in the coldest and dullest winter months.

THE PINERY FOR OCTOBER.

BY JAMES BARNES.

This is the most favourable season of the whole year for fruiting and swelling Pines. Those started from strong, robust, and well-rooted plants are sure to start strongly into blossom, and swell freely in the quiet, moderate autumn months, when the days get shorter and cooler, and the nights more humid. Maintain a kindly, sweet, and not too humid atmosphere, and reduce the heat, air, and humidity as the days shorten. Place a batch of fruiting plants on a kindly bottom heat, supply them with good, clear manure water, syringe occasionally on fine afternoons at closing up time, around their stems only, in order to start them slowly and robustly for winter swelling. Air freely every day, more particularly on quiet, warm days, giving ample time, for if too hurriedly done they are sure not to flower so strongly as they otherwise would, and very likely show some abortion and deficiency in their swelling. To the succeeding batch of fruiting plants give air freely, night and day; withhold humidity, water moderately at the root, in order to have strong fruit starting plants about the end of this year and the beginning of next. Encourage succession plants in every stage with moderate heat, humidity, air, applications of tepid manure water, occasional light syringings, only on fine days about noon, and by shutting up after a free morning's airing. Suckers may be potted as they come

to hand. They soon root and may be grown on in succession. The season has now arrived when the stock of Pine plants in every stage should be placed in comfortable quarters for the winter, the bottom heat should be seen to, and put in good condition for the winter, by reducing the old worn-out body of plunging substance, and renewing it with new, well-wrought, sweet, healthy materials, well turned over and incorporated before using. This will destroy nests of mice and start the old ones if there are any harboured about. Care should always be taken in this direction, for a more vexing, destructive, or troublesome pest cannot enter a Pine pit. The great bull-headed, short-tailed grass-mouse will eat and gnaw away at the foliage and stems only, and when once housed, it is scarcely possible to persuade it to take either poison, bait, or trap, very readily. There is also the long-tailed, long-eared, light brown, white bellied, hedge, shrubby, field, garden, blossom and seed-eating mouse, which is a terribly destructive fellow, as active as a squirrel in running and jumping from plant to plant while they are in flower, and nibbling off the blossom of every Pine-apple close to the pips, as fast as they open. This rogue is well known amongst newly-sown Peas, Beans, Spinach, and other newly-sown seeds, Nuts, Acorns, Haws, Holly-berries, and shelled seeds. It is most partial to Peas and Beans, however, or certainly prefers to make its attacks on them after the seed has started into growth. They are caught easily enough by baiting traps with Peas soaked and started about half an inch. Another nasty little fellow is the dark-coloured barn or house mouse. If he gets into the Pine pit, he sets to at once, and eats his way into the ripest and best of the fruit, and after he has there feasted it is rather difficult to poison or trap him. Small pieces of cheese and fat bacon, newly toasted, are the most enticing baits I ever found to entrap them with.

THE KITCHEN GARDEN FOR OCTOBER.

BY JAMES BARNES.

REMOVE all old fruit-bearing stalks close to the crowns of Globe Artichokes, also some of the weakest of the shoots, so as to strengthen those left, in order that they may stand the winter better, and be more easily protected. Asparagus, the growth of which is finished and the stalks beginning to turn yellow, should be cut over and the stalks dried, tied into bundles, and staked for protecting purposes. Clean the beds, fork off the surface into the alleys, and replace it by a good dressing of rotten manure, over which throw the soil forked off, and leave the surface in as rough a condition as possible, so as to expose as much of the soil as possible to the winter frosts, in order to pulverise, sweeten, and mellow it. The middle of October is a good time to begin Asparagus forcing. For this purpose take up carefully three-year-old roots from plantations grown purposely for forcing, or every alternate row of young plantations may be lifted for that purpose. Old plantations intended to be destroyed are also broken up and all good roots used for forcing. Make a slight hot-bed, which cover with 3 or 4 inches of light soil, decayed leaf-mould or bark, and on this place the roots thickly. Cover the crowns lightly at first, but after they begin to grow add a little more soil. Continue to plant and prick out Cabbage in succession. Of Coleworts all odds and ends left in the seed-beds plant out thickly between the bush and Raspberry rows; they are sure to be found useful to fill empty spaces in early spring. Keep all summer and autumn-sown Carrots clear of weeds, and dredge occasionally with dry dust small and late sown crops. Don't be in a hurry to take up the main crops, as November is soon enough for lifting for storing. Leave a portion in the ground lightly mulched with fern, dry leaves, Pea or Bean haulm, evergreen boughs, or any convertible material, in order to have always at hand fresh crisp Carrots. For Cardoons and Celery carry out previous directions in the way of removing suckers from late plantations and applying earth to crops blanching while all is dry. Select a few handsome well-fruited plants of Capsicums and Chilies for late use or winter ornament. Plants that have already yielded ripe fruit, and still continue bearing, should have them cut off, or pull up the plants and tie them into bunches and hang them up in dry lofts, and in this way many will ripen and be found useful during the winter months. Keep a steady eye every fine dry afternoon on crops of Cauliflower coming forward. Do not allow the morning frosts to catch you napping. Break down the outside leaves over the flower as soon as it begins to "turn in," or otherwise protect it, not only to prevent frost, but the atmosphere from discolouring the heads. Where crops of Cauliflowers are likely to come in the end of this month faster than they are required for use, choose a dry afternoon and take up those that are just "turning in," and lay them into old Melon or Cucumber soil in pits, turf-pits, frames, or any place where they can be sheltered and protected for winter use; those that are tolerably well "turned in" may be drawn up by their roots, bunched with all their leaves and roots to them,

and hung up in dark, dry sheds, where there is not much draught, and pot the last lot as winter approaches, and place them in pits, cold vineries, or Peach-houses. These afford an abundant supply of pretty little white crisp Cauliflowers, till early spring Cauliflowers can be obtained. Every spring an outcry is made that the Cauliflowers have "bolted" or buttoned prematurely. The main cause of this is sowing the seed out of season, generally speaking throughout the country, from three to six weeks too early. I have often pointed out this fact, and condemned the system, but it is still practised, and even recommended by some writers to sow in August. August is the only month in which Cauliflowers should not be sown. As long as this mode is practised, bolting and buttoning will continue. These early-sown plants become too strong to stand the changeableness of early spring weather. Those not killed or crippled by the winter's frost, or scathed by slug and grub, often get such sudden checks in early spring that they are, to a great extent, pretty sure to heart prematurely, and are rarely worthy of the trouble and attention of so many months. When this fact is so visible every year, why should early sowing in autumn and the production of strong winter plants still be persisted in? During my long practice I never had "bolters" to any extent, but I made my principal sowing for spring Cauliflowers the first week in October in a gently warmed frame close to the glass. As fast as the plants come up, prick them off in another similarly prepared frame close to the glass. Attend to surface stirring, the prevention and extirpation of mildew and canker. Pot into small 60-sized pots the earliest batch of pricked-off plants, and plunge them in cold pits or frames close to the glass; shift into 48-sized pots in December, plunge and treat as before. Give abundance of light and air on all fine dry days by taking the covering or lights entirely off, and by tilting them at night, as long as we have not more than 5° or 6° of frost. In this way a healthy, robust, and stubby batch of Cauliflower plants are secured in a small space, and with comparatively little trouble or expense. By this means some may be potted into large pots to place in late-started vineries or Peach houses in spring. In order to have some early Cauliflowers by the end of March or beginning of April, all who have well-prepared, manured, and trenched land, pulverized by winter, should turn out some plants in the early part of February, or as soon as the weather is open, under hand-glasses, to be encouraged for coming in in the middle or last week of April. A batch should also be put out on the west side of trenched up ridges as early in February as the weather and soil may prove favourable. Continue putting some out in this way every week till April, after which the spring plants will be large enough to plant for succession.

Plant thickly on sloping dry banks both true curled and new Batavian Endive for spring use. Tie up when dry, and cover with slates, tiles, or thin boards, or take into a shed or cellar full grown plants to blanch. Place in frames or pits, pretty close to the glass, the half and three parts grown crops from open borders and quarters for safety throughout the winter. Continue to prick out Cos Lettuces, or hardy Cabbage kinds, on healthy borders and sloping banks. Place also in frames strong and half grown plants for winter use; give air freely, and look sharp after mildew and canker. For Lettuce sowing, prepare shallow frames well sloped to the south, and filled up to the rim all round with sweet healthy pulverized earth which is not rich. Three or four inches of surface soil should have intermixed with it some fine holding loam and old mortar, all made level; on this sow the seed. After the Lettuce seed is evenly sown all over the surface, pat it down evenly all over with a clean piece of board, 10 inches square or so, or with a clean-backed spade; thus all is made firm, and the seed gets covered all equally deep; when the soil is sifted over it, leave it open and loose. The earth, though at first close to the glass, sinks gradually, in time to allow room for the growth of the plants. Take care to have a hoard or store of dry dust, dry loam, dry wood ashes, &c., which are all most valuable materials for winter use, dredging the surface soil about young plants, to prevent mildew and canker, and maintain sturdiness and healthiness amongst the plants, which is the grand secret in winter culture. Make two sowings of the white Cos Lettuce this month, in order to have healthy plants in abundance to plant out in February and March next. For young Onions, to stand the winter, maintain last month's instructions. Sow Radishes in pits and frames, close to the glass. Take up strong roots of early varieties of Rhubarb, and place them in gentle heat, in some corner, to afford a supply in November and December. Clean and protect the crowns of Seakale, and commence taking up strong roots to place in Mushroom houses, or on some kindly heat, in the dark, in order to have fine blanched Kale in November. Cut off some of the large late bunches of Tomatoes, with plenty of their stalks adhering, and hang them up in warm dry situations to ripen. Keep a clean and open surface amongst the growing

crops of Spinach. Heavy manuring and seasonable sowing and planting are the first principles of good culture; but to ensure a heavy, healthy, and profitable production—the great masterpiece of all is to maintain at all seasons an open or loose, but not too fine, surface amongst growing crops, when they will make great progress. Diseased Potatoes are, by this time, mostly decomposed and wasted away. All crops left in the ground should now be lifted and sorted. The sound ones for use place at first in small ridges for two or three weeks, covered lightly; then choose a dry day to turn back and sort over again. Previous to storing for winter, either indoors or out, the seed should be well dried and placed in dry, cold, airy lofts, sheds, or cellars. Lofts and shelves are best for those who have such at command; but large growers require much room. However their storage and frequent turning are of the greatest importance. Autumn planting is the surest safeguard against disease; the Potato is thus in its natural element, ready to commence growth at the proper season.

THE HOUSEHOLD.

BROWN WARTY AGARIC.

(*AGARICUS RUBESCENS*).

This is a very common Mushroom all through the summer and autumn months; indeed, one of the most abundant, and it is one of those species that a person with the slightest powers of discrimination may distinguish accurately from others.

Pileus convex, then expanded, cuticle brown, scattered over with warts, varying in size. Margin striate. Gills white, reaching the stem, and forming very fine decurrent lines upon it. Ring entire, wide and marked with striæ. Stem often scaly,



Agaricus rubescens. Woods, summer and autumn; colour, sienna-brown; diameter, 4 to 10 inches.

stuffed, becoming hollow; when old bulbous. Volva obliterated. The whole plant has a tendency to turn to a sienna-red, or rust colour. This is very distinctly shown some little time after it has been bruised.

OPINIONS ON THE MERITS OF *AGARICUS RUBESCENS* AS AN EDIBLE FUNGUS.—“A very delicate fungus, which grows in sufficient abundance to render it of importance in a culinary point of view.”—*Badham*.

“From long experience I can vouch for its being not only wholesome, but as Dr. Badham says, ‘a very delicate fungus.’” —*F. Currey*, Editor of Dr. Badham’s “*Esculent Funguses*.”

MODES OF COOKING THE *AGARICUS RUBESCENS*.—It may be toasted, boiled, or stewed in the ordinary way.

FRIED *RUBESCENS*.—Place the full-grown agarics in water for ten minutes, then drain, and having removed the warty skin, fry with butter, pepper, and salt. The ketchup made from *Agaricus rubescens* is rich and good. “As it grows freely, and attains a considerable size, it is very suitable for that purpose, quantity being a great desideratum in ketchup-making.”—*Pluc*.

The “Why” in Cookery.—When the flavour of vegetables, as Celery-seed, Carrots, and Turnips, is required, why should they be put into cold and not into boiling water? For the reason that if put into boiling water the whole flavour is retained in the vegetables, but if in cold water it is drawn out into the water, and is thus suitable for soup. The soup has a better flavour if the vegetables are put into it when it is boiling, and are served with the soup. Why should plenty of fast boiling water be used in boiling vegetables, Potatoes excepted? Because the greater the body of boiling water the greater the heat. If only a little water be used the whole affair soon cools and the vegetables become tough, so much so that no length of time in boiling them will render them otherwise. Broccoli sprouts in April, if properly cooked, by boiling them for eight minutes in boiling water, will be tender as marrow. But if not properly done hours will not cook them. Why should two ounces of salt and a bit of washing soda be always put into the water to boil greens in? Because the salt crisps the greens and flavours them, and the soda extracts the oil, which is greatly injurious to the digestion. Why should onions be always cut in round and very thin rings? Because the fibre is thus cut across, and in so cutting them, whether for frying or for making into sauce, they are rendered very tender when cooked. Turnips and Carrots just the same. Neither of the three should be split or cut in any way.

The Pods of Peas.—The pods of Peas are commonly thrown away as refuse after shelling, or used only for feeding cattle or pigs; but when young and tender they are an excellent vegetable, very fit for being used in soups. There is a kind of Pea called the Sugar Pea, the pods of which have only a thin pellicle as an internal lining, instead of the hard lining found in other kinds, and Peas of this kind are boiled in the pod and used like Kidney Beans. The pods of the ordinary garden varieties are, however, of equally delicate flavour, and the only, but insuperable, objection to their use as a boiled vegetable is the hard and unpalatable lining. They may, however, be used in soups, being, in the first place, boiled in a separate vessel until they can be easily rubbed to pieces. This is done by means of a wooden spoon, or similar implement, and the Pea shells are then placed in a drainer having wide holes, with the water in which they were boiled, when the eatable part passes through the drainer with the water, and forms an excellent addition to soups; or a good soup may be made by merely adding to it a proper quantity of extract of meat, or of Australian cooked meat, and heating it a little. The strings and hard linings of the pods remain upon the drainer.—*Food Journal*.

Vegetable Whitebait.—Much as I abominate shams (says a writer in the *Queen*), I know not how better to describe a mode of cooking Vegetable Marrow by which, at least in appearance, it is made to present the exact counterpart of that delicious small fish—the dish *par excellence* of which English cookery may justly be proud. To accomplish my sham, the marrow should be of a certain age, and having been peeled and freed from seeds, it should be cut in strips an inch and a half long, and three-eighths of an inch square. These should be put on an inverted plate placed in a basin, with plenty of finely-powdered salt sprinkled freely over the Marrow in such a manner that every individual piece is covered with it. After the lapse of a couple of hours place the pieces of Vegetable Marrow in a cloth and thoroughly dry them by wringing the cloth at each end, but not so hard as to smash the pieces. Coming out of the cloth their appearance is by no means inviting, but the operator need not be alarmed, for the process of frying will make them appetising enough. The next step is to flour them—as whitebait is floured—in a cloth; then have a panful of friture heated to the right temperature, plunge in the sham whitebait, and remove it swiftly as soon as it assumes the palest straw colour. Place it in front of the fire on a cloth, sprinkle a little salt over, and as soon as all the fat is evaporated pile up the deception on a napkin, and serve. The usual way of frying Vegetable Marrow is to cut it in rounds, as Potatoes are sometimes cut for frying; but for this purpose very young Marrow is generally used. I find sham whitebait is very pretty eating either by itself or as an adjunct to roast meat; but it requires to be properly fried, else it will be neither fit to eat nor to look at; therefore, those who do not know how to fry had better not attempt to make it.

Eating the Banana.—There is a way we have of eating them in the East which is worth knowing, thus—take a soup plate, strip half a dozen Bananas, and with a silver fork mash them up, adding sufficient sherry and sugar to make the whole of about the consistency of a thick soup. When so treated there is a flavour which may almost vie with that of the most delicious fruit in the world—the Mangosteen. There is a great difference in Bananas abroad; the best I remember eating were at Singapore. They were also particularly good at the Cape de Verd Isles; in China and Japan not so good, the slightly pink always preferred.—*Screw Propeller*.

A Substitute for the Potato.—The Neapolitan correspondent of the *Times* writes:—“Your remarks on the Potato famine in England have suggested to me the advantage of adopting the ordinary food, not merely of the peasantry, but of ‘well-to-do’ people of this country. No man is considered to be thriving who does not lay in his winter supply of hard Beans, or Haricots, or Lentils, or some of the numerous pulses known here as *cicerchie* or *cece*, or Peas. From day to day, in rotation, they are the constant food of the labourer or the operative, who never touches meat from one end of the year to the other, and who will do a good day’s work from sunrise to sunset, despite all that is said about the lazy Southerner. As a substitute for Potatoes they would be admirable, and, more than this, many like myself regard them as occasional luxuries, and are only too glad when they see them on the table. Of course, some expensive cookery must be employed to make them savoury.”

PROFESSOR OWEN ON KEW.

STATEMENT RELATIVE TO THE BOTANICAL DEPARTMENTS RESPECTIVELY UNDER THE TRUSTEES OF THE BRITISH MUSEUM AND THE COMMISSIONERS OF WORKS.

The British Museum, the Zoological Gardens, and the Royal Gardens at Kew, subserve in different degrees the instructive recreation of the public, and the advancement of science. The contrast in this respect, or diversity of application, agreeably with the original design and will of the State, is greatest between the "botanical department under the trustees of the British Museum" and the "botanical department under the Commissioners of Works." The first, founded and supported by the State, primarily for the advancement of botanical science, fulfils in but a small degree, from its very nature, as a herbarium or museum of dead plants, the recreation of the public. The Royal Gardens at Kew not only minister in a great degree to the recreation of the public, but afford the means of adding to the wealth, instruction, and enjoyment of the people by the scientific treatment and systematic grouping of living plants. The menagerie in the Regent's Park has relations to the animal kingdom, like those of the gardens at Kew to the vegetable kingdom: its chief application is in the instructive pleasure of the public, its scientific one is mainly in economical relations. But, as it is not supported by the public purse, the management avails itself of the zoological collections of dead animals and parts of such, and of the library, in the British Museum, "for naming the animals in the menagerie, and for giving to zoologists and zoological travellers the information they require."

In connection with the healthy and instructive resort of the public, the Royal Gardens at Kew have, or ought to have, for their aims and applications:—I. To promote the introduction and naturalization of new and useful species of plants, in relation to food, to constructions, manufactures, and ornaments. II. To effect the establishment of new and useful varieties of plants by experimental hybridization, intercrossing, progressive selection, artificial soils, and the like influences, for which the means and space at the command of the Kew Director may be available. III. To encourage and instruct the colonies in the conservation of useful indigenous plants, liable to be diminished or extirpated in the absence of such provision, with rules and methods for their propagation, based on sound instruction; to introduce and naturalise in colonies, with suitable soils and climates, useful plants, not indigenous thereto; to establish systems of interchange of living plants and seeds. [This appears, from the reports of the Director, to be well carried out.] IV. To aid and instruct the agriculturist, by the results of scientifically conducted experiments on manures, and the application of manures, such as the subterranean pipe-conveyed liquid-manure, applied by Charpentier to the improvement of vineyards. In our climate such experiments, resulting in the demonstrations of the fittest species of grasses for particular soils,—the kinds of grasses which yield the best quality and greatest quantity of food—through methods of irrigation, promoting absorption of manures, would, if scientifically carried out, result in a national benefit, repaying manifold the cost to the State of the present department of botany under the Commissioners of Works. Experience and analogy justify the hope and expectation that grasses may have their nutritive qualities increased by methods of cultivation and feeding, guided by experimental botanical physiology, in a degree analogous to the acquisition of the Potato from the poisonous *Solanum tuberosum*, and of the Yams from the wild *Dioscorea*. V. To inform and guide the taste of arboriculturists and horticulturists by the example of the grouping of trees and shrubs, by the arrangements, forms, and associations of smaller ornamental plants, by the disposition and treatment of rockworks, of ornamental waters, and of garden sculpture. VI. In its relations to the science of botany, the establishment under the Commissioners of Works stands as the sole National "Botanical Garden" in England. To the extent in which the vegetable kingdom is exhibited by living species, such species are there favourably presented to the study of the botanist, especially in relation to the anatomy and physiology of plants as subjects for dissection and experiment: next, in the degree or proportion in which the plants are arranged according to their natural affinities, in groups, *e.g.*, illustrating natural orders and families, with ample and conspicuous labelling, such proportion of the gardens at Kew, at present limited to the herbaceous grounds, affords the means of instruction to visitors of all classes in the elements of botany. To such visitors, also, the National Botanical Garden would give useful and interesting knowledge in the degree in which the plants were arranged, according to the countries or continents to which they are indigenous, in other words, according to their "geographical distribution." The extent to which this instructive or scientific application of the Kew Gardens might be there effected,

may be judged of by the disposition of the garden of James Bateman, Esq., F.R.S., at Biddulph, Staffordshire. VII. The museum attached to the National Botanical Garden should have for its more especial object, to illustrate the industrial and economical relations of plants, showing the products as extracted from them and prepared for commerce, agreeably with its original design as a centre of reception for the useful products of the vegetable kingdom. The foregoing are important national objects, which would worthily and thoroughly occupy the time and labours of the Director and his appropriate staff.

TWO NATIONAL HERBARIUMS.

The national establishment under the Trustees of the British Museum ought to be, and is, able to supplement and supply the further scientific needs of the gardens at Kew, as it does the menagerie in the Regent's Park. The Department of Botany in the British Museum is the instrument for the direct advance of that science, whereby new plants are recognised and made known and their affinities determined. The instrument is the more perfect to this end, in the degree in which the entire vegetable kingdom is represented by the preserved plants and parts of plants essential to the comparisons and researches of the scientific or species-naming botanist. The present President of the Linnean Society has stated:—"I have published several thousand of new species of plants. I have never published one without examining it in a herbarium, and I have examined very few in botanical gardens." Mr. Bentham also states:—"That dried specimens subserve the main amount of the scientific work, for a vastly greater proportion of the vegetable kingdom can be preserved and arranged, conveniently for use and reference, in the 'herbaria' of a museum, than, as live plants, in a botanical garden, even of the noble extent of that which exists at Kew." But the present Director of the Royal Gardens affirms that "a first-rate herbarium and library must also be maintained at Kew;" and the reasons he assigns are, that they are "essential to Kew for naming the plants in the gardens and museums of economic botany, and for giving to botanists and gardeners the information daily demanded of us." Again, in an official document submitted three years ago by Her Majesty's Office of Works to the Trustees of the British Museum, Dr. Hooker asserts that "the necessity of there being a perfect and complete herbarium attached to the Royal Gardens is obvious"; and, further, that "the advantages of Kew, as a site for the principal national herbarium, are now universally recognised, whence it follows, that part of the British Museum collections should be transferred to Kew." No reasons are offered for this averment.

The necessity for a herbarium or museum of dead plants and parts is obviously as great for the determination of new species of living plants received into the Botanical Gardens, as is the necessity of a museum of preserved and prepared animals and parts of animals for the determination of new species of living animals received into the Zoological Gardens; but from the necessity of such museums being part of such establishments is very far from being obvious. It is neither more nor less than in the degree of the contiguity of Kew and of the Regent's Park to the British Museum, where the nation had provided, prior to the establishment of both the Botanical and Zoological Gardens, the means of determining their living plants and living animals. In the time of the Aitons, father and son, the distance of Kew from London, reckoned by the time and facility of traversing it, was much greater than it now is. Yet the Botanical Department of the British Museum, with its scientific officers, sufficed for all the work of determination of the new and rare species received at Kew during the directorship or curatorship of those estimable and practical horticulturists. The "Hortus Kewensis" of the Aitons was, at the date of its publication, and long after, one of the standard works in botany; and the scientific determinations therein for which Dr. J. D. Hooker affirms the obvious necessity of a second or duplicate national herbarium at Kew, was done by Dryander, Solander, and Robert Brown, the librarians and curators of the Banksian and National Herbaria now in the British Museum. Such works would be equally well done by the present accomplished botanist, the successor of Robert Brown. The delusion that a museum of natural history must be essential, as juxtaposed, to a garden or a menagerie, swayed for a time the direction of the London Zoological Gardens. But these not being maintained by the public purse, but by the subscriptions of private individuals, the real state of the case was sifted, and the delusion recognised. The Museum of Zoology was abolished; its contents distributed to the proper establishments, where they were wanted, and were truly useful, *viz.*, the anatomical specimens to the Royal College of Surgeons, and the rest to the Zoological Department of the British Museum. The scientific applications and publications of the Zoological Society have in no degree deteriorated or diminished since the determination and comparisons of their new species have been carried out by means of the national establish-

ments founded and supported for such work. Thus, not only is the necessity "of a perfect and complete herbarium at Kew" not obvious, but the contrary. How far such alleged necessity has been universally recognised may be judged by the "Notes on Mr. Russell's Memoranda," above referred to, by J. Jos. Bennett, Esq., F.R.S., Keeper of the Botanical Department, sent in to the Trustees, 15th January, 1869, and forwarded to the Office of Works.

A botanical museum, including a herbarium for the advance of the science, through the naming of existing species, and the determination of extinct species of plants, fulfils the aims for which a nation provides and supports it in the degree of the completeness of its collections. In the measure in which a competing museum and herbarium, also maintained at the public cost, approaches, through the interception of State collections of botany, and by outbidding at botanical sales, to the perfection and completeness affirmed to be a necessity at Kew, it detracts from the utility and the primal aim of the metropolitan national museum. To give an example of such evil, nullifying completeness by rivalry: the herbaria collected by Banks and Solander, in the circumnavigatory voyages of Cook, and those collected in the later voyage of Flinders, were deposited, with the sanction of the Admiralty, in the botanical department of the British Museum. By and through these herbaria, with the aid of the Banksian Library, subsequently bequeathed with his remaining natural history collections by Sir Joseph Banks to the British Museum, Robert Brown was enabled to produce his works on the botany of Australasia, raising the science of plants in a degree second only, if inferior at all, to that effected by the immortal works of Linnæus. On every account, scientific, administrative, and economical, collections of dried botany subsequently made by Government officers in Government expeditions, especially those supplementing the illustrations of Australian and New Zealand vegetation, previously arranged for the service of science in the British Museum, ought to have been located there. But the portion of the botanical collections made during the Antarctic Expedition of Sir James C. Ross which has found its way to the British Museum is chiefly the Cryptogamic, or that including the Mosses, Fungi, and Lichens. For the higher organised, or phanerogamic part, by far the larger proportion of the collections, the botanist requiring a comparison of them with the earlier described species from New Zealand and Australia is now compelled to go from the botanical department of the British Museum to the competing department developed by Dr. Hooker at Kew. Not only so, but since the Antarctic Expedition of Sir James C. Ross, the Royal Gardens at Kew, according to the present director's evidence, "have been the recipient of almost all the collections made by Government expeditions." That is to say, not merely the specimens of living plants, which would have found at those gardens an appropriate location, but the dried or otherwise preserved specimens of dead plants have been diverted from the Metropolitan Museum. The necessity thus imposed upon the British and foreign botanist to quit the herbarium in London for the herbarium at Kew, arises in no way from the nature of the case, but has been created by the will and, in my view, the misapplication of opportunities and influence of the present director of the Royal Gardens at Kew. Thus, in place of that amity and co-operation to a common end of public utility which ought to exist between the establishment for dead plants at the British Museum and that for live plants at Kew, they have been dragged into antagonism. Dr. Hooker, in his reply to question 6,681 of the Scientific Commission, speaks of them as "competing bodies." But the British Museum has had no part in bringing about this unwise and unthrifty and uncalled-for condition. The competition carried on at the public cost, in which the keeper of the botanical department of the British Museum is compelled, by his duty, to bid against rivals for rare and essentially needed herbaria, as far as his proportion of the annual parliamentary grant to the trustees will go, is solely due to the director of the botanical department under the Board of Works, acting, as I submit, from a mistaken view of his duties and responsibilities.

(To be continued.)

Quinine.—Why do not the prescribers of subjects for the "Newdegate" prize, or for its counterpart at Cambridge, select the "Naturalisation of the Cinchona Plant?" Nothing can be more romantic, more pregnant with mighty results, more susceptible, in a word, of poetic treatment, than that exploit. Little more than twenty years ago the Dutch contrived, at imminent peril, and amid much trans-oceanic vicissitude, to convey a few slips of the quinine-bearing Cinchona plant to Java, on whose slopes it now flourishes luxuriantly. Their example was followed by ourselves, but by that time the jealousy of the Peruvians at the threatened loss of their staple product was aroused, and it was only after adventures parallel in their strangeness to those of Bolivar the Liberator, that our agent, Mr. Cross, succeeded in escaping from the country with the progenitors of those plantations which now cover the slopes of the Neilgherries and the

lower spurs of the Himalayas. Next to the romance of its naturalisation the prospect of its services to the cause of civilisation and enlightened enterprise, whether missionary or commercial, is full of inspiration. Quinine is to the European resident in the tropics what the Davy lamp is to the miner—the condition not only of his activity but of his life. But for quinine, we should have known little or nothing of Central Africa. But for quinine, the great missionary explorer, whose assured safety has so recently afforded such universal gratification, could not have achieved what he has done, or be able prosecute his quest to the close. But for quinine our tenure of India would be rendered doubly precarious. This last consideration gives peculiar significance to the success of the Cinchona plantations in the Madras and Bengal presidencies. Within herself she produces the conditions of her subjection to British rule. But those conditions are susceptible of infinite expansion. The fever to which our troops and stations are exposed yields to no remedy so easily as quinine, and yet that drug is still so dear that its use is dangerously restricted. Cheaper substitutes have been resorted to with disastrous results, inasmuch that the Indian government a few weeks ago telegraphed for a special supply of 500 lbs. of quinine for consumption in Bardwan alone. This consignment of sanitary munition will arrive not a minute too soon to meet the febrile outbreak expected in October and November. The home government, however, is not always to be relied on in such emergencies; and not till the realisation of the late Lord Mayo's hope that quinine will be supplied from Indian head-quarters, not at 6s., but at 1s. an ounce, can the sanitary, the social, nay, even the political condition of our greatest dependency be regarded as safe. With increased immunity afforded by this chief of febrifuges from the malaria of the jungle or the hill country, every undertaking, whether local or Imperial, in India, may be expected to double its progress, so as to convert the peninsula into something infinitely more to us than Sicily was to the Roman Republic—the granary, the storehouse of the central power.—*Lancet.*

HARDY PLANTS IN FLOWER ROUND LONDON.

(FROM SEPTEMBER 19TH TO OCTOBER 2ND, INCLUSIVE.)

BY OUR OWN REPORTERS.

Arbutus Unedo	Berberis Fortunei	Cosmos diversifolius	Ononis viscosa
Aster Drummondii	Chrysanthemum sinense	Crocus nudiflorus	Rudbeckia tomentosa
multiflorus	Clematis graveolens	Dianthus gallicus	Stevia purpurea
oblongifolius	Colchicum longifolium	Helianthus argyrophylus	Viburnum Tinus
Reevesii vesicolor			

Plants in the above list are almost without exception such as have come into bloom during the past fortnight. Those subjoined have been given in previous lists; but are still sufficiently in bloom to be effective.

Acanthus latifolius	Colchicums Coreopsis auriculata	Gynerium argenteum	Pentstemon Jaffrayanus
longifolius	lanceolata	Helenium autumnale	Physostegia denticulata
Achillea ægyptiaca	Corydalis capnoides	Helianthus annuus	Polygonum cuspidatum
Ptarimica plena	lutea	lactiflorus	sachalinense
serrata plena	Crocus speciosus	multiflorus pl. orgyalis	Prunella pyrenaica
Aconitum Napellus au- tumnale	Cytisus capitatus	Helichrysum bracteatum	Pyrethrum serotinum
Anchusa italica	Daphne collina	Hibiscus Moscheutos	Rudbeckia fulgida
Anemone japonica	Fioniana	roseus	hirta
Antirrhinum majus	Delphinium Belladonna	Hutchinsia alpina	Neumannii
rupestris	Consolida formosa	Lamium maculatum	Sedum albo-roseum
siculum	Heudersonii	Leucanthemum lacustre	Selschinnium Sieboldii
Arundo conspicua	Dianthus dentatus	Liatris pycnostachya	Solanum jasmoides
Aster Amellus concinus	lacinatus	Linaria dalmatica	Stenactis speciosa
lævis	Diplopappus linariifolius	heterophylla	Sternbergia lutea
Novæ Angliæ sagittifolius	Echinops ruthenicus	purpurea	Stokesia cyanea
teuifolius	Erica vagans	repens	Tournefortia heliotropioides
turbinellus	vulgaris	tricornithophora	virginica
Astrantia carniolica	Erigeron glaucum	vulgaris	Tricyrtis hirta
Athanasia annua	Erodium carvifolium	Lythrum flexuosum	Tritoma Uvaria
Callistephus chinensis	Manescavi	Malva Tournefortii	Valloradia plumbaginoides
Callia palustris pl.	Eryngium amethystinum	Matthiola incana	Verbena venosa
Campanula rotundifolia	Eupatorium ageratoides	Monarda fistulosa	Vernonia novæboracensis
Centaurea montana	purpureum	Enothera hiennis	Veronica Andersonii
Centranthus ruber	Fuchsia gracilis	macrocarpa	Vittadinia trilobata
Chelone obliqua	Funkia grandiflora	missouriensis	Zapana nodiflora
Chrysocoma vulgaris	Galatella punctata	Ophiopogon spicatus	
Clematis Flammula tubulosa	Gaura Lindheimeri	Origanum Dictamnus	
	Gladiolus Branchielyensis	Pentstemon barbatus	
		brevistemon	
		gentianoides	

THE GARDEN.

"This is an art

Which does mend nature: change it rather: but
THE ART ITSELF IS NATURE."—*Shakespeare.*

GARDEN EXHIBITION GROUNDS.

THE Royal Horticultural Society's Show at Birmingham may be cited as having furnished an example of how not to arrange garden exhibition grounds. Nothing could possibly have been worse, either in the planning or the carrying into execution of the arrangements for the reception of the noble collection of plants and horticultural structures brought together on that occasion. At the same time no site could have been better suited for the marshalling of such a display than the lower grounds at Aston. There was a suitable area of green sward, the close proximity of fine timber—an approach through part of the spacious walled gardens of the old hall, the noble part of which has been so sadly dismembered, and many finely grown trees and shrubs in those gardens, to say nothing of the picturesque basins, fountains, and flowery parterres which have been brought to such perfection by the present spirited proprietor. And yet with all these attractive adjuncts the arrangements of the area devoted to the exhibition were literally so bad in every possible respect, that the wretched want of method in producing the display to the public could not possibly be surpassed, especially as regards the discomfort experienced by the spectators in making their way to the different points of attraction, which had to be effected by wading towards each tent or other object through a positive sea of mud, which, notwithstanding the wet weather, need not have been there, but for most extraordinary absence of system in the preliminary arrangements.

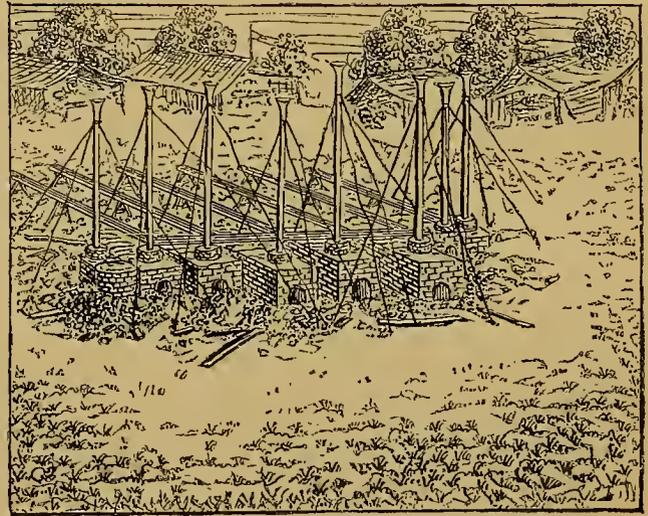
In the first place, instead of a waggon road being formed close to the outward enclosure of the ground, and at the back of the tents, where the plants and other objects might have been unloaded without cutting up the turf in front, the heavily-laden vehicles, from want of some such arrangement, were driven over the moist ground in every direction, cutting up the grass into a mere slosh, which in many places was ankle deep, not only producing discomfort of a serious kind, but also quite destroying the effect of the show. The principal tent, in which an amazing display of rare or finely-grown plants was shown, in a highly creditable manner; with wide, winding gravel walks, through its whole extent, leading the spectator along a line of beauty that Mr. Morris might well have taken as the type of his "Earthly Paradise," was rendered as nearly as possible unapproachable, in consequence of a deep slough at each entrance, and the slough in question was not the work of the persistent rain, which would have been comparatively harmless, but of big waggon-wheels, which had cut deeply through the tough turf, and made every possible preparation for the expanse of mud, which existed almost everywhere on that occasion.

In the second place, there was no well devised plan for the symmetrical distribution of the tents. They were dotted about at haphazard, and in the most confusing and incongruous relation to each other, although it would have been so easy to have established some kind of order in their distribution, which would not only have been pleasant to the eye, but might also have aided the general classification of the objects of various kinds which were exhibited. But it was not so. There was no order at all—nobody knew where to go to see what he wanted—and so puzzling, so bewildering was the arrangement that it was impossible to guess, by the position of the tents, what he had seen and what he had not seen.

In the third place, objects of most uninviting aspect, however useful and even necessary they might be in horticultural processes, should not have been thrust into prominently conspicuous situations, and yet they were so, often to the exclusion or concealment of more pleasing ones, which were allowed to fall into the background. The annexed sketch will serve as an illustration of ugly, though useful, machinery occupying a conspicuous place in the Birmingham Horticultural Exhibition; and it must not be imagined that this

was a solitary example, for it was not; it was just one example of a hundred other instances of the hideous and disorderly masses of unbeautiful things, thrust into unnecessary prominence; their being placed in such positions having potentially contributed to the creation of the foot-bath of mud which had been so copiously provided for the compulsory use of the visitors on that memorable occasion.

Having taken a cursory view of the glaring errors of arrangement committed in the marshallings of the Birmingham Horticultural Show of July last, let us turn to the more congenial task of endeavouring to point out how a better, more pleasing, more comfortable, more orderly, and complete classified arrangement might have been effected. In the first place, the waggon entrance and road round the grounds should have been entirely distinct; the road being close to the outer limits of the ground, at the back of the tents, and at the outer side of the open spaces devoted to the exhibition of machinery, glass houses, frames, &c., the spaces for which should have been quite distinct from those devoted to the open air exhibition of trees, shrubs, and flowers. With this basis for the general arrangement, the central, or visitors' portion of the ground, need not have been cut up with ruts, and the machinery and other mechanical objects exhibited



A souvenir of the Birmingham Boilers.

would have been kept distinct, and not have been allowed to disfigure the arboreal and floral sections of the display.

The tents should have been erected so as to form a covered way round the whole of the area devoted to plant display, leaving an open space at the end of each tent, which should have been embellished on either side with groups of ornamental shrubs and floral parterres. The shrubs should have been made to conceal the ends of the tents, always more or less unsightly, only leaving the entrances clear. Through these shrubs there should have been two paths to the open ground, one for advancing and the other for returning parties. In this way the tents would have been visited in their proper order, and no confusion could have arisen. There should have been no passage round the exterior of the tents, on the side next the limits of the exhibition ground; and on their inner side, next the central space, there should have been masses of evergreen shrubs and trees, arranged by nurserymen to screen the uninteresting expanse of plain and often shabby canvas. This desirable object was, in one instance, partially effected by a fine display of Conifers and other trees exhibited by Mr. Noble, of Sunningdale, on one flank of the principal tent, an oasis of successful screening which only tended to make other tent-flanks in the mud-desert more offensive. The space for the exhibition of trees and flowers in the open air should have been subdivided by broad, well drained walks, the trees being planted in groups by the nurserymen who exhibited.

In the mechanical part of the grounds, the department consisting of pipes, boilers, smoke flues, drain tiles, and furnaces,

should have been kept quite separate, and fenced off with handsome shrubs and flowers from the sight of those who felt no interest in the mere anatomy of horticultural structures, which are often ugly, and sometimes even repulsive in aspect. Models of new or improved forms for the ordinary greenhouse, warm stove, vinery, Peach-house, or orchard-house, and other horticultural buildings, should have been separated from each other by trees and shrubs where space permitted, so that the form and general aspect of each could have been seen distinctly and separately, and thus have the appearance, as far as possible, of being *in a garden*, instead of a show ground. In the wirework department the stands, baskets, jardiniers, &c., might have been filled with flowers, so as to avoid that very extensive display of naked painted wire, which, in the mass and unfurnished, does not produce a garden-like, so much as a neat-safe kind of effect.

These hints are necessarily crude and insufficient, but embodied and carried out by the genius, faucy, and sound judgment of some of our leading nurserymen and gardeners, would be likely to lead to the avoidance of such disagreeable incongruities as those which occurred by wholesale, at the otherwise important and instructive horticultural show at Birmingham.

NOEL HUMPHREYS.

NOTES OF THE WEEK.

— OF the various aquatics that withstand the severity of our winters near London, none surpasses the *Aponogon distachyum*, as regards free and continuous blooming qualities. This plant has been in flower more or less since April last, and in several places round London at the present time it may be seen producing its deliciously fragrant and pretty flowers in sufficient quantities to make it probably the best aquatic in bloom out of doors at this season.

— IN the Hospital of San José at Lisbon, and also in hospitals at Oporto, the bark of *Eucalyptus globulus* has been for some time past successfully employed in febrile cases as a substitute for quinine.

— GREAT quantities of Apples are now, as they are indeed annually, being shipped from Brittany to Glasgow and the north. The prices and freights are much higher than usual. The fruit is carried in staunch well-handled smacks.

— APPLES raised from the Siberian Crab are spoken very highly of in America. They are called Siberian Crab Apples, and are said to possess good qualities as dessert fruits, and particularly as cooking ones. One called Transcendant is now well known in the markets, and realises good prices.

— AMONG the most conspicuous objects in flower at the present time in the Temperate House at Kew are specimens of *Encalyptus cordata* and *E. calophylla*. The flowers of these, in colour and in form, somewhat resemble those of the Myrtle, and are agreeably fragrant. They are fine plants for temperate countries or for very large cool houses.

— THE finest features of our gardens at present consist of what are known as sub-tropical plants, notably such noble-leaved subjects as the Rice-paper plant and the Castor-oils, which are yet in some of the London parks in as good condition as they were in the height of summer; whereas, most of the ordinary bedding plants succumbed to the frosts which we experienced a fortnight ago.

— THE *Retinosporas*, which many of our readers only know as small Fern-like bushes, are, of all the newer Conifers, the most valuable, at least such was our conclusion the other day on seeing the superb specimens of these in Mr. Bohn's rich collection at Twickenham. They have the grace of filmy Ferns, and are so tall and stately as to promise to be among our finest Pines as regards size.

— A STRIKING illustration of the advantage of utilising waste steam may now be found in Mr. Beaufoy's garden, at South Lambeth. On the lawn there is a little pond about 2½ feet deep, charmingly ornamented with a rich tropical vegetation, which nestles on water made tepid by means of waste steam. Here *Limncharis Humboldtii* forms an outside or marginal zone all round the water 5 feet in width, and studded with lovely Primrose-coloured blossoms which are thrown up in thousands during the whole of the summer months. Never, indeed, have we seen this fine water plant to half so good advantage as we saw it the other day in this little lawn pond, which, moreover, contains plants of *Nymphaea dentata* and *Deviensis*, both of which have flowered in the greatest profusion, and have acquired dimensions seldom met with even in tropical aquariums. Their roots are lifted every winter, and are kept in the stove in

water. They are potted in early spring, and are again consigned to their former summer quarters. In case of an unlooked-for accident, some of the *Limncharis* runners are also taken indoors, but the bulk of the plants is left all winter in the pond, where they not only survive but shoot out again in spring with a vigour unknown to plants grown under glass. Both in winter and summer the condensed steam continues to enter the pond, so that the water in it is always more or less warm.

— WE recently drew attention to the fine old *Pancretium caribæum* which we saw in flower at Meadowbank, and were equally pleased the other day to find several fine plants of it in the Palm stove at Kew. Their beautiful pure white flowers made them the most striking plants at present in bloom there. A good plant of *Strelitzia ovata*, a beautiful flowering Aroid, is also now in fine bloom in this house, of which it forms one of its most attractive ornaments.

— ROSHERVILLE GARDENS were sold by auction this week for the sum of £24,600.

— It is proposed to cover the new vegetable market at Edinburgh at a cost of £8,000 or £10,000.

— MICHIGAN, says *Hearth and Home*, raises some very fine Apples. Some Michiganders thought so, and sent five barrels last year to Queen Victoria. Queen Victoria thought so too, and sends an order this year for seventy barrels for her winter use.

— THE *Warrington Guardian* announces that Mr. George Crossfield, of Warrington, has increased his donation of £5,000 to £9,500; so that with Colonel Patten's £3,000, the Warrington Public Park is paid for.

— THOSE who reside near the lake in Victoria Park are not the only people who are suffering from the presence of foul water. The ornamental water in St. James's Park is at present in so foul a condition as to be a source of real danger to health. Immediate attention is demanded to remove the nuisance; and if any sanitary precautions are worth taking at all, surely here is a case deserving notice.

— THE people of Berkhamstead are raising funds to perpetuate a recollection of their late townsman Mr. Augustus Smith. £65 was contributed at a recent dinner of the Berkhamstead Cottage Garden Society. Mr. Smith was a great friend of education, and met with much opposition as the founder of the parochial school in 1834. It is proposed to devote the money to the giving of prizes to scholars in the Board and National Schools.

— THE vintage in France will be small this year, first, owing to the unfavourable weather that prevailed early this summer, and even lately in all the more important vine-growing districts; and, secondly, from the ever-increasing ravages of the *Oidium* and *Phylloxera vastatrix*—the depredations of which are spreading to such an extent in the south of France that only the other day M. Dumas announced to the Académie des Sciences that in a few years the vineyards of Provence will have ceased to exist, if some means are not promptly taken to arrest its progress. He asked that a prize of £20,000 should be offered by the State to whomsoever should discover the means of efficaciously preventing such a disaster.

— IN the current number of *Fors Clavigera* Mr. Ruskin states that he has been asked to contribute to the purchase of a park near the metropolis, and he replies: "I will not; and beg you, my working readers, to understand, once for all, that I wish your homes to be comfortable and refined; and that I will resist to the utmost of my power all schemes founded on the vile modern notion that you are to be crowded in kennels till you are nearly dead, that other people may make money by your work, and then taken out in squad by tramway and railway, to be revived and refined by science and art. Your first business is to make your homes healthy and delightful; then, keep your wives and children there, and let your return to them be your daily 'holy day.'"

— WE have received from Mr. Peter Barr a beautiful collection of blooms of the dwarf bulbs now in flower that are commonly called "autumn Crocuses." It is, however, desirable that there should be some correction in their nomenclature, as regards their common names, for the plants belong to distinct genera. First, there is the true *Crocus*, of which there are at present two species in full bloom—*C. nudiflorus* and *C. speciosus*; secondly, there are the *Colchicums*, of which there are numerous beautiful varieties now in flower—the English name for these is Meadow Saffron; thirdly, there is the yellow *Crocus*-like *Stenbergia lutea*, which is sometimes called the "yellow autumn *Crocus*." This is with good reason supposed to be the "Lily of the field," and that is the most fitting English name for it. Besides the above, we also received flowers of *Zephyranthes candida*, of which Mr. Barr has a bed that has been in bloom for these two months past. In his grounds at Tooting are also to be seen, just commencing to bloom, two uncommon species of *Crocus*, viz., *byzantinus* and

serotinus, and Mr. Barr says that from this time till April he shall have a continual succession of Crocus blooms. All these plants are as easily cultivated as the common Crocus or the Snowdrop, and deserve to be cultivated in every garden, large or small.

— THE Duke of Cleveland has offered fifty acres to the Corporation of Wolverhampton for £20,000 for the purposes of a people's park, which offer will shortly be considered by the Council.

— A QUANTITY of Irises has been given by Messrs. Bntler and McCulloch, of Covent Garden, for planting in Finsbury and South-wark Parks.

— A MEETING has been held in Manchester for the purpose of considering the desirableness of an international exhibition of fruit, flowers, and vegetables being held in that city. It was resolved that, with a view to the holding of such a show, an appeal be made for subscriptions, and that the Manchester Botanical and Horticultural Society be requested to co-operate in the movement, to allow the proposed exhibition to take place under their auspices, and in their gardens.

— THE Secretary of State for the Home Department has given his consent for the appropriation of Leyton Park House and grounds, consisting of about twenty acres of gravel land, as the site of a new cemetery for North-East London; and a company, called "The Leyton Park and the North-East London Cemetery Company," has been formed to carry out the undertaking.

— THE directors of the Alexandra Park Company have, we understand, requested Mr. McKenzie to prepare a scheme for establishing a school of horticulture, for which purpose about 20 acres of the grounds attached to the building will be set apart. As we have no school of horticulture in this great gardening country, we hope something more may come of this than of its short-lived and feeble forerunners.

— THE Portuguese *Jornal de Horticultura Practica* announces a forthcoming Flora of that country by Sr. barao de Castello de Piava, who was formerly Professor of Botany in the Academia Polythetica. Great things are expected from the new work, in which the subject will be brought up to the level of the knowledge of the present day, including all the discoveries which have been made since the time of Brotero, whose once celebrated "Flora Lusitanica" is now seldom to be met with for sale.

— We learn from the *Brighton Herald* that the fine Araucarias in Mr. Mitchell's nursery, at Piltown, have this year fruited freely. The appearance of their enormous cones is most singular, and gives a lively notion of tropical vegetation. Piltown has been visited within the last few days by a large party of the Brighton Town Council, and other Brightonians would do well to follow the example. It is a delightful drive from Uckfield or Hayward's Heath, and our great Rose grower will, we feel sure, give visitors a hearty reception.

— In the vicinity of Bologna, Count Pasolini, of Ravenna, the former Prefect of Turin, is trying the experiment of growing vines upon the French plan; and the same is being done in that neighbourhood by a French gentleman. The vines have been barely four years in the ground, and this year, for the first time, their fruit will be made into wine. Notwithstanding her glorious climate, the vineyards of Italy are so badly managed that the wines do not bring more than three half-pence or twopence a bottle in many districts.

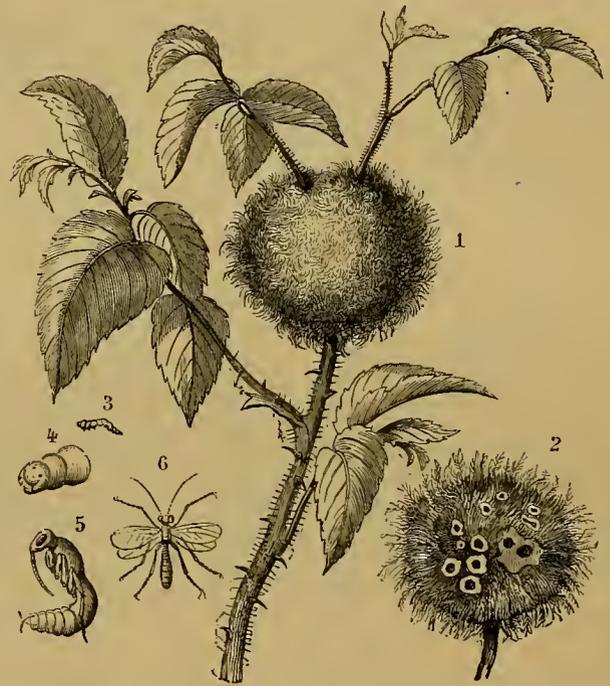
— THE Commissioners of her Majesty's Works and Public Buildings intend to distribute, as usual, this autumn, among the working classes and the poor inhabitants of London, the surplus bedding-plants in Battersea, Hyde, the Regent's, and Victoria Parks, and in the Royal Gardens, Kew. If the clergy, school committees, and others interested will make application to the superintendents of the parks nearest to their respective parishes, or to the director of the Royal Gardens, Kew, in the cases of persons residing in that neighbourhood, they will receive early intimation of the number of plants that can be allotted to each applicant, and of the time and manner of their distribution.

— DURING the past week there have been very large importations of Potatoes from France, Belgium, and Holland, at Great Grimsby. The Potatoes are packed in bags, weighing eight stones, and meet with a ready sale, at 7s. 6d. a bag, from local dealers. There are no symptoms of disease among them, and the importation has been not less than 200,000 pecks during the past week. Those from France meet with ready purchasers at fourteenpence per peck, but preference is given to those that come from Ghent. We understand that two large steamers have been chartered to carry cargoes of Potatoes from some of the principal ports in the Baltic, and that insurances to the extent of from £8,000 to £9,000 have been effected on the cargoes which are expected to arrive in Liverpool in about three or four days.

GARDEN DESTROYERS.

THE BEDEGUAR (CYNIPS ROSÆ).

It is always interesting to trace the persistence of character or peculiarity in whatever phase it may appear. "The father's image" delights us for other reasons than those which make it "the mother's joy." The phenomena of derivation, even when shown in the reappearance of gout or a sixth finger, interests us as illustrative of some great law which we can only see "darkly as through a glass." Very often, nevertheless, what may appear to be the result of some great law is only the very simplest necessary consequence of the structure of the organism in which the object that interests us occurs. Thus the false cones on a Fir twig produced by a chermes are not the result of a recondite inclination in plants of that kind to produce cones, nor are succulent excrescences in a monstrous Cabbage of a disposition to produce fleshy leaves, nor is the Bedeguar on a Rose bush of an inclination to produce mossy calyces; but they are simply expansions or modifications of some part of the plant which bears them; the modification of the twig and its bark under the excitation of an insect in the one case producing a false cone, or a mossy lump, while the modification of



The Bedeguar.

the same part by the excitement of producing fruit gives birth respectively to the external character of a true cone or a moss Rose.

The accompanying figure represents the Bedeguar of the Rose and the various stages of its architect or fabricator. Few of our readers can be unacquainted with it. It is so conspicuous and curious that it is sure to attract attention. It is a mossy excrescence, which by the month of September is as large as a medlar, covered with filaments like those which give the mossy character to a moss Rose. As the season goes on it assumes a reddish or pinkish hue mingled with yellow and green. It is produced by a small gall-fly named *Cynips Rosæ* (Fig. 6), which is shining black, with the base of the abdomen and legs reddish. The insect lays about a dozen of eggs close together at the extremity of a branch of a Rose tree. They are not laid on the surface, but the insect either cuts a slit in which to place the eggs or rather punctures the epidermis and deposits the eggs below it. The irritation of the tissues produced by the larvæ which are hatched from these eggs causes an excess of woody fibre to be deposited around them. The spot increases in size, and as the larvæ grow the irritation

doubtless increases, and the exterior throws out the mossy filaments which characterise the Bedeguar. These are not mere threads but flat processes, with branches striking off on each side. If the excrescence is cut across, it will be seen to consist of numerous cells in a hard woody substance, as shown in Fig. 2, and in each cell is a single small larva (Fig. 3); or if it is farther advanced, a pupa (Fig. 5) like a half-developed fly. Fig. 4 represents the termination of the body of the larva.

It might be expected that, considering that these larvæ are surrounded by a solid wall of hard woody fibre, they would be safe from the attacks of ichneumons, and so, no doubt, they are after they are so surrounded; but there is a period of their life when they are not so protected, viz., while they are still young, and when the woody fibre is only in the state of soft cellular tissue around them. At that epoch their enemy (a chalcidite named *Diplolipes Bedeguarensis* or *Callimome Bedeguaris*) finds them out, and often strikes every member of the whole Bedeguar colony, so that when the time for the perfect insect to appear arrives, it is a tribe of ichneumons that emerges instead of *Cynips Rosæ*.

The Bedeguar cannot perhaps be called very destructive. It, no doubt, must prove a drain upon the strength of the plant, and so far must be regarded as injurious; but we imagine it is rather on account of its being an unsightly object than for its actual damage that gardeners object to it. A single specimen or two might be passed for the interest and curious nature of its structure; but when a number appear together it looks neglectful, and we wish them away. It is chiefly the Wild Rose and Briar that is attacked, but it is not confined to them, attacking various other varieties of the Rose.

The remedy is to cut off the excrescences and burn them, and as they are conspicuous and easily detected, it is not difficult to get rid of them. A. M.

THE INDOOR GARDEN.

HYACINTHS IN WATER.

THERE are two great mistakes made by many of those who attempt to grow Hyacinths in water; the one is an improper selection of varieties to cultivate, with which anything like satisfactory success is improbable under the best management; the other is want of attention—this last being a most prolific source of failure. Almost without exception, single Hyacinths alone should be grown in glasses. It is the characteristic of certain varieties of single Hyacinths to produce good, close, compact spikes; but it requires some of the cultivator's art to produce a good close spike of a double Hyacinth, even when grown in pots. Want of attention is a fertile source of failure, and plants of all kinds are certain to fail if requisite attention be not given them. On a warm sunny day in the month of April I have frequently seen Hyacinths in glasses within a window deprived of ventilation and languishing for want of water. At best, long-drawn sorry specimens result, and blame is frequently laid at the door of a seedsman, on the ground that the bulbs were not good, when it is wholly the cultivator who was at fault. Then the old, ugly, upright glass is clung to and used, and as there is no support for the flowering spike—at least, a support that is elegant in appearance—the Hyacinths soon become lopsided, and frequently tilt over the glasses, owing to their superincumbent weight. The cultivator of Hyacinths in water should not grow large so much as medium-sized solid bulbs. About the middle of October is the best time to place the Hyacinths in glasses. The best type of glass is that known as Tye's registered, not unlike a wide-mouthed small decanter in appearance; while Claudet & Houghton and others have very pretty designs in Etruscan and other wares. Fresh water should be used, and it is a good plan to fill the glasses, and then place in each three or four pieces of charcoal, about the size of a cob nut, to keep the water from becoming offensive, and therefore obviating the necessity for its being frequently changed. This should be done about three days before the bulbs are placed in the glasses, as in the interim the charcoal becomes thoroughly saturated with moisture, and sinks to the bottom of the glass. If placed in the water at the same time as the bulbs, it will occasionally happen, in the case of strong quick-rooting varieties, that the descending roots encircle the charcoal and keep it close under the base of the bulbs. There is no real necessity for placing the glasses in the dark to induce a free root growth. It is an old practice, but it is not the more necessary to be followed because it is old. I have grown Hyacinths in glasses with much success for the past ten

years, and have for a considerable period discontinued placing them in the dark. The theory set up is that "roots, as a rule, delight to grow in the dark, the action of light being unnatural to them." But the generality of Hyacinth glasses are of an opaque character, and the newest types in Etruscan ware, &c., altogether so. When the bulbs are placed in my own glasses, they stand on the mantelpiece, the sideboard, &c., and a bulb seldom fails to root very satisfactorily, and then invariably because of some inherent defect. The roots of the Hyacinths make growth first, unless it be very late when they are placed in water. In its own time the foliage appears, and then it becomes necessary to keep the glasses in a cool, airy position, so that the leaves do not become drawn, as also to keep the glass filled with water to supply that which becomes absorbed by the roots and lost through evaporation. When charcoal is placed in the glasses it is rarely necessary that the water should be changed. I have read very elaborate but very tiresome rules relating to the culture of Hyacinths in water, in which it is urged that the water should be changed at least once a week. Some of my best flowers have been grown in glasses the water in which was not once changed. If a brisk fire be kept in the room where the glasses are, there will be need for fresh water being placed in the glasses twice or thrice a week, so that no part of the roots may be without water. The best position for the glasses when the bulbs begin to make upward growth is the most airy and lightest part of a sitting-room, but as far from the fire as possible. The foliage of the plants should be kept free from any deposits of dust; a small piece of damp sponge will remove these with but very little trouble. As the flower spikes are thrown up, proper supports, made on purpose and sold with the glasses, should be affixed for use. They are neat in appearance, and answer the end for which they are designed admirably. If the glasses be placed in the window when the spikes are in flower, they should be shaded from the action of the sun when bright and warm.

THE BEST SORTS.

That beautiful double blush Hyacinth Lord Wellington does admirably in a glass, and it is also one of the noblest Hyacinths grown. Of single varieties, I have found all of the following do well: Duchess of Richmond, bright pink; Emmeline, delicate blush; Gigantea, pale flesh; Madame Hodson, shaded pink; Norma, waxy pink; Robert Steiger, bright dark carmine red; Sultan's Favourite, delicate blush; Baron von Tuyll, dark porcelain blue; Bine Mourant, dark blue; Charles Dickens, lively violet; Emicus, deep violet; Grand Lilas, delicate azure blue (this beautiful variety should never be omitted); Leonidas, clear bright blue; Mimosa, dark blue purple; Orondates, pale porcelain blue; Regulus, shaded lavender blue; Alba superbissima, pure white; Cleopatra, creamy white; Grandeur à Merveille, waxy French white; Grand Vainqueur, pure white; Madame Van der Hoop, pure white, a beautiful variety; Seraphine, creamy blush; Themistocles, pure white; Anna Carolina, pure yellow; Heroine, clear yellow; and La Citronière, deep citron yellow. If I were called upon to name the best dozen, I should select Duchess of Richmond, Emmeline, Robert Steiger, and Sultan's Favourite from the reds; Baron von Tuyll, Charles Dickens, Grand Lilas, and Leonidas from the blues; Cleopatra, Grandeur à Merveille, Grand Vainqueur, and Themistocles from the whites. If a yellow is wished for, La Citronière could be substituted for one of the white varieties. D.

Dendrobium Falconeri.—Your correspondent says (p. 290) that his plant is doing so well that it seems a pity to arrest such healthy progress; he is therefore experiencing what I have observed for several years, that Orchids that come from Assam and Bhootan, where the monsoon or wet season commences in June, they like to grow with us during autumn and winter. I advise him to let his plant grow. Mr. Williams says that this *Dendrobium* is so difficult to grow that few are successful with it, a circumstance which need not be wondered at, if cultivators insist upon their plants doing what is unnatural to them. I think that the structure of this *Dendrobium* shows that it is not wanted to stand the trial of drying off, but I should like to hear what Mr. Sherratt, Mr. Petch, or Mr. Culley can tell us about it; I have seen them all mentioned in the papers, as having successfully flowered it. An Orchid will not flower well except it is sufficiently dried off; but more plants are killed by this process than by the growing treatment which they get. *D. Falconeri* is best grown in a basket in pure sphagnum, peat does not suit it; it should, however, have a good-sized basket, and then it does not dry up so soon.—NIEMAND.

Whits Flowered Tillandsia.—We noticed at Messrs. Rollisson's, the other day, blooming plants of a newly imported *Tillandsia* which had been recently bought at one of Stevens's sales. It has white flowers 2 inches or 3 inches long, and deliciously scented, on which account alone it will be an acquisition to our stove epiphytes.

GARDEN DESIGN.

ISLANDS IN LAKES OR RIVERS.

BY NOEL HUMPHREYS.

EVERY landscape gardener who has laid out grounds in which there was scope for the introduction of artificial water, knows full well the great advantages to be derived from the introduction of islands, either as sites for masses of foliage not intended to be too closely approached, or as picturesque devices for concealing the extent of the water, and agreeably cheating the eye as to its direction; while, at the same time, the island produces a pleasing kind of curiosity concerning its own nature, and the character of the shores which its well-selected position conceals from the inquiring eye.

Such effects are not easy of artificial execution; and in order to treat them successfully in the waters of parks, large or small, natural models, of various kinds and very opposite characters, must be very carefully studied. For instance, the river scene dotted with islands, which accompanies the present suggestions, is a fine natural type, full of rich hints for the lake portions of an artificial landscape.

This hint of the smaller islets might also be employed with great advantage along the shores of the main water, to break the monotony of outline which is almost inseparable from a shore artificially built up. But the islet device, as a line breaker, must be very skilfully and very sparingly applied, or it might prove a detriment instead of an improvement. The dramatic author, in Sheridan's inimitable burlesque, "The Critic," tells the audience that his introduction of the evening gun at Tilbury Fort produced a most successful and striking effect; but that theatrical managers when they get hold of a good thing always run it to death, and that in his case they ruined his play by firing half-a-dozen of them. In a similar way landscape garden managers, if unskilful, might run the small islet principle to death by constructing a whole army of them, all in a row, at a short distance from the shore, which, by adding a second kind of formality to the first, would increase instead of remedying the "hard and fast line" of an artificial shore. Properly applied, however, great advantage might be derived from such features. Take, for instance, the edge of the Regent's Park water, which is always a convenient example of badness, and consider its hideous unbroken line of brickbat-built confines, and we shall at once see how valuable



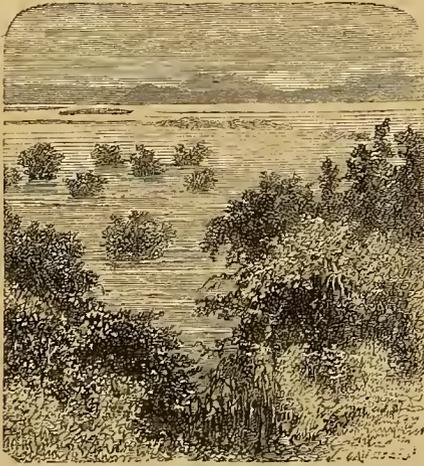
River Island Scenery.

There are, for instance, in this example, two principal island features separated from each other by means of a narrow channel. This fact alone affords one or two very valuable hints. In the first place, a means is suggested, by an accident of nature, which would enable the constructor of artificial islands to avoid that lumpiness which often detracts from both the artistic and natural aspect of such devices. This lumpiness of an island form, otherwise well contrived for the concealment of the termination of the water, is conspicuously evident in the islands created with that view in the water of the Regent's Park, where the defect complained of might easily have been avoided, and an effect of naturalness and increased grace have been obtained by an irregular diagonal channel dividing the mass in two. Secondly, the side of the island next the main water might have been carried out to an attenuated termination, as in the natural example shown in our engraving, which would have prevented, to a very great extent, that kind of formality which is too apt to creep into unskilful imitations of natural scenes. Then, again, any too obvious evidences of "manufacture" about the opening of the separating channel might be very successfully masked by small islets, irregularly placed, as may be seen in the fine natural model which is serving us for a text.

the introduction of a few small islets might be made. They should never, as a rule, be introduced separately, but in picturesquely-designed groups, one or more being made to assume nearly the character of small peninsulas, then a jutting irregular mass of three or more separate ones might extend the broken effect farther into the water, and, as a last feature of the group, one might be introduced, at such a distance as would tend to shade off, as it were, and balance the effect just as an artist would do in a picture. In this manner something analogous to the charmingly irregular and picturesque outlines of natural shores and beaches might be effected, if combined with judicious planting and the selection of suitable shrubs, which should occasionally reach to the water's edge, and even extend over it, casting those bowery shadows which in rich natural combinations of foliage and water are so exquisitely beautiful; while in other places, at well-balanced and well-calculated distances, green glades should run down to the water and mingle with its shallowest ripples, or a small bare beach of sand or gravel might be contrived, which would give variety of colour as well as of form.

It may be objected to the kind of model here set up as an example, that the original scene is upon too large a scale to

admit of imitation in the restricted space of an ordinary park or pleasure ground. But it should be recollected that a great painter succeeds in transferring the most extensive scenes to a few feet of canvas, and an engraver to a block of Box wood or a steel plate with a surface of only a few inches. It is, in fact, the careful study of the greater and more extensive scenes of nature that enables an artist to treat the most minute subject without pettiness, and to impart that breadth of touch to his smallest works which is the crucial test of true



Islets.

art—a principle which is as applicable to the art of landscape gardening as it is to those of painting or engraving.

GARDEN RECIPES.

HOW TO DESTROY ANTS.

The most simple and effectual way to destroy ants is to pour boiling water on the nests at night; but if the nest should be in a pot amongst the roots of a plant, the best way is to immerse the pot and plant in cold water, and let it stand for five or six hours, in which time the ants will all be drowned, and their eggs destroyed.

A very effectual plan is to place raw meat in dishes or vessels of any kind about places which they infest, and, as they prefer that kind of food to any other, they surround it in thousands. Boiling water is then poured upon them, and this, if persistently applied, with the bait above recommended, will in time effect a good riddance.

The following mixtures have also been found successful:—4 ounces of quassia chips, boiled for 10 minutes in a gallon of water, dissolving in the liquid while cooling 4 ounces of soft soap. Or take 1 pound of black soap, dissolve it in 4 gallons of water, and sprinkle the solution through a fine rose over the runs and nests, taking care, however, not to water the roots of the plants with it.

The following poison is highly spoken of:—Ferrocyanide of potass, 1 drachm; raspings of quassia, 1 drachm; sugar in sufficient quantity to form a syrup. The ants are said to devour this greedily and die almost immediately.

It is not generally known that fresh Peruvian guano will drive ants from any spot, however firm a hold they may have obtained on it. Paraffin and benzoline oil are said to have the same effect. Turpentine, gas-water, flowers of sulphur, lime-water, a decoction of Elder-leaves, chloride of lime dissolved in water, and camphor have also been recommended. Suppose a colony of ants to be commencing operations on a lawn, it is an easy matter to trap them all by placing a large empty flower-pot, with the hole stopped, over it. The ants will build up into the pot, and in a short time it may be lifted with a shovel and be carried away and dropped into a vessel of water, which will make an end of them. When they make a run up the stem of a fruit tree, a line of gas tar all round will put a stop to their progress and do no harm to the tree. To poison them, mix arsenic with sugar and water, put the

mixture in a saucer and lay a slate over it, and on the slate a stone. This, of course, is a dangerous plan, and any who think of adopting it must use their own judgment as to the safety of any larger animals. It is said that ants will avoid any tree which has a circle of chalk around the stem.

In houses and other places where hot water cannot be poured on the soil without danger to the plants, pieces of coarse sponge dipped in diluted treacle will form a most effectual trap. The ants will crowd into the sponges, which should be taken up from time to time and thrown into a vessel of boiling water. An equally effectual plan, in such places, is to lay half-picked bones about. These will soon be covered with ants, and can then be thrown into a vessel of boiling water, after which they should be again laid down to attract a fresh batch of victims. By persisting in the use of either of the two last-mentioned traps, a house will be completely cleared of ants in a short time; the sooner, of course, in proportion to the number of bones or sponges employed.

In the *Revue Horticole* for September, 1870, the following method of destroying or banishing ants is described as having proved quite successful: Take 2 ounces of soft soap, 1 pound of potash, and about 2½ pints of water. Boil the whole together for some time, stirring the ingredients occasionally. The liquor may then be allowed to cool. With a pointed stick or dibble make holes here and there in the soil infested by the ants, at a safe distance from any plants which may be growing there, to avoid any chance of their roots being injured by the mixture (although this is doubtful), and fill the holes once or twice with the preparation. By this means M. de Forghet was completely successful in clearing his Melon beds of these troublesome insects.

THE GARDEN FLORA.

NEW PLANTS.

Kentia Forsteriana.—A new species of Palm from Lord Howe Island, which lies between New South Wales and New Zealand, introduced by M. Linden. It differs from *Kentia Balmoreaana* in having a more tapering habit, and leaf-stalks of a shining green colour. In *K. Balmoreaana* the leaf-stalks are tinged with red.

Brodiaea multiflora.—A beautiful Californian bulb, found in the Sacramento Valley, and also in Utah. It bears densely crowded sub-globose heads of bright blue flowers on stalks from 1 foot to nearly 2 feet high. The leaves are few, from 1 foot to 2 feet long, one-sixth to one-third of an inch broad, and of a lively green colour. It has been flowered this year by W. Wilson Saunders, Esq.—*Bot. Mag.*, t. 5989.

Salvia taraxacifolia.—A handsome Sage from the Atlas Mountains, with leaves resembling those of the Dandelion in shape. It grows from 6 to 18 inches high, and bears pale pink flowers with a yellow lip, in whorls of six to ten blooms each. It is a very ornamental rock-plant, but would probably require protection during winter in this country.—*Bot. Mag.*, t. 5991.

Tropæolum chrysanthum.—A handsome greenhouse climber from New Granada, with slender grey or rose-coloured stems, thinly covered with transparent white hairs, the rest of the plant being quite smooth. The flowers are pendulous, and of a handsome golden yellow, on long twisted stalks, and have the three lower petals deeply toothed on the margin. Sown in April, it commences to flower in June and continues to bloom till August.—*Illustration Horticole*, t. 102.

Scutellaria Moriciniiana.—A remarkably showy plant, bearing large plume-like tufts of deep scarlet flowers, which stand erect at the extremities of the stem and branches. The flowers are tubular, about 1½ inch long, and have a yellow under-lip, which contrasts finely with the rest of the flower. It is probably identical with the *S. Mocciniiana* of Bentham, the similarity of the names pointing to an evident corruption. It requires an intermediate house, and does best in a mixture of free loam with peat and well-decayed leaf-mould.—*Revue Horticole*.

Death of another Lady from the Sting of a Bee.—A sad occurrence recently took place, at Haltonshields, near Matten, resulting in the death of Mrs. John Beattie, of that place. Mrs. Beattie was in her garden between three and four o'clock in the afternoon, and, whilst adjusting a cloth which had been laid over a hive of bees, one of them stung her on the arm a little above the wrist. She returned to her house, but immediately complained of being unwell. A swelling of the bowels and throat set in with great severity, and in the course of half an hour from the time of the occurrence she expired.

THE GARDENS OF ENGLAND.

CRAGSIDE.

CRAGSIDE, the residence of Sir William Armstrong, is situated in one of the wildest and most romantic districts of Northumberland, and as regards some of its features is perhaps unequalled. The grounds lie on two sides of a deep and rocky ravine, through which a small streamlet runs to join the Coquet at a little distance below. The gardens, properly so called, occupy a sort of platform on one side of the valley, while the mansion stands against the face of the rocky crag on the opposite side. The glass erections, which are of considerable extent, are devoted principally to the cultivation of fruit trees in pots. The engineering skill possessed by Sir William has enabled him to introduce a somewhat novel mode of treating trees in pots. In one house the floor, which is of timber, is made to rest upon wheels exactly like a railway truck; these wheels are placed upon rails which extend sufficiently far beyond the house to allow the platform with its load to run clear out into the open air, the end of the house being so constructed as to permit this to be done. By means of the turn of a handle the whole is set in motion, and finally stands still of its own accord where it is wanted, while by reversing the handle the platform with its load moves back again to its place in the house. All this is accomplished by hydraulic pressure. The rails being laid with a slight incline to the house, the platform runs back by means of its own momentum. Another feature of this glass is the covering of a considerable space of ground with glass, as a protection to half hardy plants, which are put out in beds with these glass protections; the roofs are movable, and are taken off during the summer months. There is also a grotto fernery constructed on a plan somewhat similar to that of the Messrs. Backhouse at York, and also a house intended for the growth of hard-wooded plants.

The kitchen garden is somewhat small. From this portion of ground a winding footpath takes one down the steep face of the gorge across a foot-bridge of a most airy description; its span is 72 feet; from the footway to the stream below the distance is 64 feet; the whole of the material used in its construction is cast iron, weighing only six tons. Seen from a distance it looks more like a rope for Blondin to perform on, than a bridge. From it a fine view of the whole place is obtained. Looking up the valley to the left, the eye rests upon a sheet of water, formed by an embankment thrown across the upper end of the gorge, backed by the surrounding hills. This miniature lake has a very natural appearance, and is seen to great advantage from the residence. Looking down the valley one is struck with the beauty of the Coniferous plantations; it is little more than ten years since Sir William began to plant extensively the rarer kinds of Conifers, and his success in that direction must have astonished even himself.

Good taste and judgment are shown in planting the different kinds to suit their natural habits. There is no crowding here of a mass of trees together like a plot of Cabbages. Open glades and wide spaces are left between them, filled in with hardy Heaths, Rhododendrons, Ferns, and Alpine plants, with many a mighty boulder that has tumbled down from the crag above and found a final resting-place lower down the valley. Indeed to see the beauty and luxuriance of the hardy Heaths at Cragside is a sight never to be forgotten. The Alpines are no less beautiful; great care is taken in their cultivation and no expense spared to construct for them a proper home along the face of the crag. Mr. Bertram, the head gardener, tells me that many hundred loads of peat and sand were brought from the high moorland above and placed with great trouble and expense in the crevices and hollow spaces amongst the rocks; indeed the rocks themselves have in a great measure been re-arranged. I have seen a good deal of rock scenery of different kinds, but nature has been so closely followed here that I could not help giving expression to your well selected GARDEN motto:—

This is an art
Which does mend nature: change it rather: but
The art itself is nature.

The mansion stands upon a projecting rock, the side facing westward looks down into the valley beneath, the rocks pro-

jecting from under the foundation. It is a fine Gothic building, nearly new, and will, as a matter of course, in time assume a darker tint, more in keeping with the grey rocks and dark scenery around it. The beauty and novelty belonging to this place, indeed, consists in the complete contrast which exists between it and the olden homes of England, with their long avenues of spreading trees and ever-green grass. I am only able in this short sketch to describe a few leading features of this place, which, through the kindness of Sir William, is open to the public at least one day in the week. The railway to the romantic village of Rothbury, which is only about a quarter of a mile distant, brings thousands from the forge and coalpit to see "Sir William's place at Cragside." J. T.

Charm of a Garden.—It is, indeed, this frequent change, this never-wearying variety, that is the main charm of a garden. You leave home for a little time, and when you return, lo! everything is changed. New colours, new forms, new perfumes greet you. There are fresh flowers on the stem, fresh fruit on the bough. I know few things more enjoyable than the first walk in your garden after an absence from home. Few men, who are really fond of gardening, ever care to be long away from their household gods. It is, indeed, one of the most salutary effects of a love of gardening that your thoughts seldom turn towards the delights of vagrancy and the charms of strange places.—*Cornhill.*

THE FLOWER GARDEN.

MALVA CRISPA.

This is a vigorous-growing annual, 3 to 7 feet, or more, in height, growing in an erect pyramidal bush of densely crowded broad leaves with a very undulating curled or frizzled margin.



Malva crispa.

Bushes of this are pretty in groups, beds, or borders. It may be sown in cool frames about the end of February, and put out early in May, by which means strong plants may be obtained early in the season, or it may be treated as a hardy biennial if sown in autumn, but the former is the best plan to adopt. The flowers are small, white, and inconspicuous, and it is only worth growing for its foliage. A native of Greece and Germany.

A GIANT ROSE TREE.

A FAMOUS Rose tree grows on the Ooragalla estate, Hantanne district, Ceylon. It is 80 feet in circumference, 15 feet high, and is bearing at present at least two thousand Roses. Ceylon, though not rich in her native flora, is a kind stepmother to nearly all plants introduced there, as witnessed in the magnificent spread of her numerous coffee plantations, and the thousands of varied subjects introduced into the Peradenia Botanical Gardens. The Rose tree in question was planted by Mr. Wright (the gentleman who sent to England the collection of specimens of woods of the Ceylon timber trees, now to be seen at Kew), in the bungalow garden of the Ooragalla coffee estate, and is a Gloire de Dijon allowed to spread *au naturel*, with slight trimmings to keep it in bounds. It is only one of the many fine examples of Rose growth to be found in the Kandian Province, the central mountain zone of Ceylon, where the little fairy Rose (*Rosa Lawrenciana*) is used as a garden edging, as Box is used in England,

It is one of the features of the coffee estates in Ceylon, that every planter surrounds his bungalow with a neatly-kept flower garden, and the Rose there, as everywhere else, is the queen; only the difficulty attending the transport of the newer varieties from Europe has kept the collections limited. The Rose tree is a bad traveller when closely packed, and a three months' voyage round the Cape has generally proved too much for it; even the quicker route of the Red Sea has rarely proved successful as the means of introducing the newer varieties of Roses into Ceylon, hence the kinds grown there are few, and consist chiefly of the Gloire de Dijon, Barclayana, Noisette multiflora alba, several varieties of the China Rose, the Provence, and the little fairy Rose; but of these the most is made, and Rose hedges, mixed with *Gardenia florida*, invariably form the boundaries of the bungalow flower gardens. On the Peacock coffee estate, in the Pusilawa district, the splendid property of the late General Sir John Wilson, under the able superintendence of Mr. George Waite, are miles of hedgerows of the Provence Rose, growing from 2 feet to 3 feet high, planted by the sides of the Bandy roads, that form the approach from the main Government road to the stores and bungalows of the plantation, and as divisions to the different fields of coffee on the estate. These, at the season when they are in flower, form a glorious fringe to the masses of dark green shining foliage of the coffee bushes. Mr. Waite has been upwards of twenty-five years a Ceylon planter, and was, no doubt, one of the first to introduce Rose hedges on the coffee plantations, an example that has been so widely followed, that in riding or walking through the coffee plantations of Ceylon, one is often tempted to repeat those lines of Byron:—

Know ye the land of the Cedar and Vine,
Where the flowers ever blossom, the beams ever shine;
Where the light wings of Zephyr, oppressed with perfume,
Wax faint o'er the gardens of Gul* in her bloom?

I need scarcely mention here that the Rose edgings and hedges need frequent trimmings, and that shears and billhook are made to perform this work so often that frequently the Roses degenerate into almost single flowers; but with that determined persistency that nature always displays in reproducing herself, cuttings taken off the old plants, and struck in good soil, bear flowers as double as the original ones. The method of planting the hedgerows of Roses in Ceylon is exceedingly simple. At the beginning of the rainy season, a deepish narrow trench is dug where the hedge is to be planted, and the cuttings are inserted, crossing each other somewhat in the form of a *chevaux-de-frise*. The work being performed by coolies, is generally done in the rudest manner, but under the influence of the warmth of the tropical sun, rain, and soil, it is rare that a failure takes place. PETER WALLACE.

THE HARDY BAMBOOS.

THESE giants amongst grasses are widely distributed in the warmer regions of the globe, the larger species reigning in the torrid zone. Humbler, but still remarkable representatives of the tribe are, however, pushed like advanced sentries to the northern parts of Japan and China, and to the south as far as the more southern parts of Chili, many plants from which regions are known to be quite hardy in England, as well as in continental Europe. I shall be obliged to leave aside the species belonging to the southern hemisphere, as little information respecting them can be gleaned from books, and none are yet found in gardens—a circumstance much to be regretted by English amateurs, as there is no doubt but that the Chilian *Bambusaceæ* would thrive much better in England along the shores of the Atlantic, than in the warmer but drier coast of the Mediterranean. Some forms of *Bambusaceæ* are said to be found in the elevated regions of Mexico, and in the great valley of the Mississippi, but none of them have been as yet introduced into Europe. For the present, therefore, our attention must be confined to the species indigenous to the Asiatic part of the northern hemisphere, or, in other words, to those introduced from Himalaya, China, and Japan.

Many years have elapsed (half a century, I believe) since *Arundinaria falcata* was introduced into England from the Himalayas, and yet this elegant plant is not grown so much in gardens as it well deserves to be. In Italy, too, *Arundinaria falcata* is very little known. I remember having seen some beautiful specimens on the

Lombard lakes, though often erroneously named. In the botanical garden at Pisa there are also two large masses of this plant, which, however, seems not to be so easily propagated as other members of the true genus *Bambusa*. From personal experience, I may add, that plants of *Arundinaria falcata*, which I had every reason to believe were correctly named, have constantly failed with me, their foliage having proved as tender in our burning summers as in the generally temperate winters. Other species of *Arundinaria* are to be found, mostly in continental botanic gardens, such as *A. macrosperma*, *A. tecta*, *A. glaucescens*, and some others. There is a great diversity of opinion, however, respecting them, both as to their specific name and as to their native habitat. I possess one under the name of *A. spathiflora*, which has fully proved to be a very desirable plant, its foliage being of a deeper green than many other *Bambusaceæ*, and its culms tinged with black, much like *Bambusa nigra*. It is a very hardy kind, and appears to be of vigorous growth; its culms or stems do not, however, attain any great thickness.

Coming to the true Bamboos, the hardy kinds introduced into modern gardens are natives (with a single exception, perhaps) of Japan and Northern China, and for their introduction and distribution we are chiefly indebted to French horticulturists. The so-called sub-tropical gardening, which originated in Paris, and which has subsequently extended all over Europe, has indeed been the principal cause of researches having been made for plants of this tribe, many of which were first introduced into the Jardin du Muséum or the Jardin d'Acclimatation of Paris. Tender plants from more tropical regions, like Palms, Musas, Aroids, Cannas, &c., are undoubtedly at the disposal of modern gardeners, but none amongst them are thoroughly hardy in the true sense of the word, their delicate foliage being frequently spoiled even in summer by the uncongenial climate of France or England. Such plants as Bamboos are specially to be prized, as they retain in an eminent degree the luxuriant gracefulness of tropical vegetation, even in the middle of winter, when their foliage shines as bright and green as ever. One can hardly imagine the beautiful sight which these plants offer when mixed with such evergreen shrubs as are commonly planted in parks and gardens, as Sweet Bays, Portugal Laurels, *Laurustinus*, &c. All these shrubs or trees assume in winter a dark and dull tinge of green, and it is a matter of constant observation that the more intense the cold the darker these plants appear; the Bamboos, on the contrary, look quite as bright and fresh as in the middle of summer. It may be useless to descant upon the wide difference between the stiff, dense, bushy habit of many of our evergreens, and the incomparable gracefulness of the drooping boughs of the Bamboos. If planted on a large scale they would create quite a revolution in gardens. The usefulness of many species for making riding and umbrella-canes, and fishing-rods, and for many other purposes, may be imagined when we remember the innumerable domestic and fancy objects which the industrious Chinese and Japanese know so well how to make with them. Their propagation is quite easy; sometimes the growth they make is astonishing, from its vigour and quickness. I have had myself shoots of *Bambusa* growing 10 inches in one day (say nearly half an inch to the hour).

I will now try to enumerate the species at present grown in continental Europe, the greater part of which I have myself tested. I must, however, mention that this essay is only written from a horticultural point of view, because, as far as botany is concerned, my powers would be quite inadequate to the task; the more so, as of many species no scientific descriptions exist, their inflorescence not having as yet been observed. It is said that in China alone not less than 63 species or forms of Bamboos are enumerated by Chinese botanists. It is certain that the following list is far from complete, but I hope it will be found of some use, considering the present imperfect state of our knowledge of such plants, and that your readers will at least not find in it, so far as it goes, other than exact information.

1. *Bambusa mitis* or *edulis* is undoubtedly worthy the honour of being placed first, as it is the largest among the hardy kinds, the stems even of young plants soon attaining a thickness of more than an inch, and a height of about 16 feet. It has a more compact habit of growth than many other kinds, its subterranean rhizomes not expanding so much, and the shoots being inserted at a very small angle on the principal stem. According to Mr. Robert Fortune, the well-known traveller and introducer of so many beautiful plants from Japan and China, this kind, to which he gives the Chinese name of Maw-chack (chack, or chauw being the generic Chinese name for Bamboo), attains in the northern districts of that empire the wonderful height of 60 feet, and a proportionate thickness. It is too much to hope that in our gardens it will ever reach such astonishing dimensions. In the botanic garden of Palermo a plant of this kind growing close to *B. arundinacea* and *B. Thonarsii*, which are fully 50 feet high, has not gone much beyond 15 feet. Is this

* The Rose.

the real species alluded to by Mr. Fortune? Has the true species ever been tried in England? These questions it would be desirable in the interest of horticulture that some of your English correspondents, or Mr. Fortune himself, should answer. As to the eatableness of the tender shoots of this plant, I can state that they are an excellent vegetable, fully justifying the Chinese taste in this matter. The young shoots of other species, as *B. aurea* and *B. viridi-glaucescens*, are also very good; those of *B. nigra* are a little more bitter. *B. mitis* is a late grower, new shoots appearing only in the month of June, and this peculiarity alone would confirm its comparatively northern origin. I very much doubt whether this is the true *B. mitis* of Poiret, to which Cochin China is assigned as its native habitat.

2. *B. Metake* or *Mataki*.—This must not be confused with the preceding, as I have found to be the case in several catalogues and books. It is a plant of more humble growth, looking rather like a coarse kind of *Panicum*. It is very hardy, and grows in dense bushes, but it is generally affected by a peculiar disease, so that its culms are incessantly going into flower, producing, too, some seeds, but depriving the plant of any ornamental value. There were once two large bushes of this kind on the island in the Bois de Boulogne lake at Paris, but I think they have now been removed on account of their unsightliness. It is not a plant to be recommended for cultivation, except to those who desire to see the flowers and seeds of a Bamboo, such a rare occurrence in other species.

3. *B. aurea*.—This species is easily distinguished by the stems assuming with age a clear golden colour, and its foliage also possesses a general golden hue, from which it has derived its appropriate name of Golden Bamboo. In general appearance it looks like a diminutive form of *B. mitis* in all its parts, the leaves being smaller, and the stems thinner, differing, however, from it in having a rather straggling habit of growth, new shoots appearing often several yards from the parent plant. It is perfectly hardy here (as much so as in France), and it appears to be wild both in Japan and in China.

4. *B. viridi-glaucescens*.—This kind, introduced only a few years ago from China, will very soon become widely diffused in gardens. It is not a variety of *B. aurea*, as I remember to have seen stated somewhere. In its habit it is widely different from the other kinds in cultivation. Its slender culms, with rather long internodes, have their shoots inserted nearly at right angles, so that every one assumes a graceful drooping appearance, which is still more embellished by the hue of the rather large leaves, bright green above, and glaucous below. The young stems are of a darkish green, changing gradually to a beautiful golden colour. Among the kinds as yet introduced this is certainly the most vigorous in growth. I purchased a few years ago quite a small plant; it has rapidly covered an area of more than 200 square feet, notwithstanding the soil is far from good, and although I have taken away more than one hundred plants in the course of three years. Clumps of this Bamboo (say eight to ten stems together), carefully taken up and potted, are of immense decorative value, the more so if seen by artificial light. They will look then like a group of finely-cut *Chamaedoreas*, their foliage being more elegant and feathery than that of any Palm. If properly managed, they will continue to live perfectly in pots for an undetermined period, but new vigorous shoots must not be expected.

5. *B. nigra*.—Among the Japanese species this must have been, I think, the first introduced, and it well deserved the attention of early botanical travellers and collectors for its elegant stems and fine shoots, all of a shining jet black colour. The young stems when first developing from their spathes are greenish, changing gradually to a brownish-yellow, which towards the end of the second year changes again into the beautiful dark colour characteristic of this species, and which makes it so well adapted for umbrella handles, riding whips, &c. These stems are never as large as those of Nos. 1, 3, 4, and I think that even in good soil they will not attain much beyond 10 feet. The foliage is very dense, and of a deep green colour, the leaves being also more narrow than those of the above-described species.

6. *B. violascens* (Carr.).—Under this name a new species has been recently introduced, which in its mode of growth and general appearance looks like an intermediate form between *B. aurea* and *B. viridi-glaucescens*. The young stems and shoots are beautifully tinged with a bright violaceous hue, and it seems to attain at least the size of the two species mentioned, and even to be not less hardy than them. It was first introduced from China into the Jardin d'Acclimatation du Bois de Boulogne, Paris, and afterwards described and named by M. Carrière, editor of the *Revue Horticole*.

7. *B. Duquilloi* (Carr.).—Introduced with the preceding, and dedicated by Carrière to an officer of the French navy. I possess a specimen of it, which, though not much developed as yet, appears to be a distinct kind, connected, however, with the preceding

Nos. 3 and 4, and equally hardy. Further experience will put its merits in a more evident light.

8. *B. Simonii* or *Maximowiczii*.—This kind, introduced recently, and I think, at the same time into France, by M. Eugene Simon, and into St. Petersburg by Professor Maximowicz, appears to be a very hardy one, having been found in Mandchuria. I possess only small specimens of it, but it seems as if it will attain at least the dimensions of *B. aurea*.

9. *B. Fortunei* fol. var.—This is a dwarf kind of Bamboo, so small, indeed, that at first appearance it would be taken for some humbler grass. It was introduced, I believe, some twelve years ago, being then figured in several horticultural papers, and much recommended, on account of its presumed hardness and elegant foliage. It is really a little gem, never attaining under the most favourable conditions much more than 1 foot in height. The comparatively large leaves are richly striped with the purest white, and remain so all the year round, whilst *Arundo Calamagrostis* fol. var., and other variegated grasses, generally lose their variegation in summer. It is of an exceedingly spreading nature, and once established it is very difficult to eradicate it, its numerous rhizomes running freely through the soil to the depth of 2 feet and more. Thus it can defy the strongest cold, which will, at most, only slightly injure its elegant foliage. This Bamboo is well adapted for rockwork, and for borders before shrubberies, where it may be allowed to run at its pleasure. Its variegation is persistent, and I think that the original unvariegated form has not been introduced into Europe. It would be, however, a plant of very small interest for horticulture.

10. *B. officinalis*.—I possess under this name a rather dwarf species with large bright green foliage, growing in dense bushes with erect culms not more than 2 to 3 feet high. It is not a very ornamental plant, unless used for planting along the margins of streams or lakes where a neat dwarf green cover is required. It is a compact grower and tolerably hardy, though in a minor degree than all the preceding species.

11. *B. verticillata*.—Native as it is of the northern parts of India, this species is still hardy enough at Florence, though it must be said that it does not show here the vigour of growth it possesses in its native country, where it has been stated to grow to the height of 60 feet and more. Its foliage, disposed in rather distant verticils on the shining orange-coloured stems, is rather liable to be spoilt in our winters. It deserves to be much recommended for conservatories, and the more so as it has a very compact habit of growth.

12. *B. gracilis*.—When first introduced this beautiful species was considered to be thoroughly hardy, and if it had proved so it would easily have become the queen among all the other species for the unparalleled elegance of its drooping culms gracefully reclining under the weight of their feathery foliage. Unluckily this species is hardy only in favourable situations, owing mostly to the peculiarity that it puts out new shoots in autumn, which are of course too tender when the first cold appears. If treated like a perennial plant it will put out early in spring new shoots full of vigour, which become quickly covered with their rich foliage, and form such a beautiful ornament as to well repay the slight additional trouble of covering it in winter. Magnificent specimens of this Bamboo are to be seen on the shores of the Lake Maggiore and of that of Como. The *B. graminea* of many catalogues must, I think, be referred to this species.

13. *B. falcata gracilis*.—Under this evidently horticultural name, I received some years ago, from Leroy, of Angers, a kind of Bamboo looking much like a variety of the preceding. It is indeed in all parts a diminutive form of it; having thinner stems, smaller leaves, but perhaps a still more elegant appearance. It has proved to be a little more hardy, and from that may be perhaps deduced that this is only a northern or mountain form of the preceding.

14. *B. scriptoria*.—About this species, with whatever classical interest it may be invested, I can only say that having tried it for several years I have never seen it grow with any vigour. Its minute foliage is liable to be spoilt not less by the rays of the sun than by frost in winter. Altogether it is not a kind to be recommended for ornamental purposes.

15. *B. argento-striata*; 16. *B. viridi-striata*; 17. *B. reticulata*.—These three variegated forms (I really do not know to what species they should be referred), have been lately introduced from Japan, I think by the lamented Von Siebold. They seem to be tolerably hardy, but as yet I have not observed vigorous shoots of them, and know nothing about the size they can attain to. Their variegation is not so constant as that of *B. Fortunei* fol. var.

18. *B. glaucescens*; 19. *B. distorta*; 20. *B. stricta*.—Of all these kinds or varieties, of very doubtful origin, I can only state that, having tried them, I have found them all worthless, owing

perhaps to the weakness and bad constitution of the specimens I have been able to procure.

21. B. arundinacea; 22. B. Thouarsii; 23. B. spinosa; 24. B. aureo-variegata.—These four species are certainly not more hardy at Florence than they would be in England. At Naples and Palermo they attain gigantic dimensions; and I mention them here on account of their usefulness for conservatories, &c., as, after all, they do not require a very high temperature to live in. *B. arundinacea* of gardens, the biggest species in cultivation, seems, however, not to be the true *B. arundinacea* of Willdenow, which is described as armed with thorns. *B. Thouarsii*, Kunth, is really related to the preceding; but I have found it a little more hardy, that is, able to withstand temperatures of 28° and 30° Fahr. *B. spinosa*, Roxburg, generally armed with ternate recurved thorns, is of exceedingly vigorous growth, and would be precious for making hedges and fences were it only a little more hardy. It can endure, however, a lower temperature than the preceding. It has been of late largely planted in Algeria. *B. aureo-variegata*, a form of doubtful affinity, will attain wonderful dimensions, as may be seen in the Botanic Garden of Palermo, where stems 30 to 40 feet high, and fully 5 inches in diameter, attract the attention of the visitors with their dazzling golden colour, relieved by irregular stripes of a dark green. For large conservatories this would be certainly the most striking sort of Bamboo.

Phyllostachys bambusoides, Sieb. and Zucc., is the only representative of a new genus of *Bambusacæ* introduced from Japan, and which has proved quite hardy even at Berlin. It is of a rather humble size, and in general appearance looks something like *B. Metake*, with which, however, it is not to be confused.

In conclusion, I will only add a few observations relating to the culture of these plants, and to the hardiness with which they are endowed. As regards their culture, it must be generally observed that Bamboos do not require so much moisture as one would imagine from their analogy to our indigenous reeds. They do not occur only along streams or in valleys, but clothe with their gay verdure many of the hills and mountains of Japan, their rhizomes creeping generally at a little depth under the ground. Thus, a rather rich and light soil will certainly increase their vigour of growth; but they will also thrive in stiff clayey soil, and even among stones. To avoid disappointment, it is important to remember that, for the first or second year after being planted, the Bamboos will only put forth feeble and thin shoots, as it is only when their rhizomes have grown strong that vigorous and tall stems may be expected. These stems acquire in a few days their definite height, nor do they increase in diameter, no matter how many years they may be left in the ground. Their small shoots are liable to subdivide year after year, and to put forth new leaves. The stems become harder and harder with time, and assume different colours according to the species, the average period of their ripeness for economical purposes being from eighteen to twenty-four months. It must also be remarked that, in order to obtain profit from these plants, as well as for ornamental purposes, it will be useful to suppress the inferior shoots when quite tender at the moment they are coming out of their spathes. In this way the wound inflicted on the knot will disappear with maturity, the superior shoots will of course gain in vigour, and a not unwelcome addition to vegetable diet will be acquired.

With reference to the hardiness of Bamboos, without recording that the climate of the northern parts of Japan and China is certainly not milder than that of England, I will only relate a fact from personal experience. In a very unfavourable situation, exposed to the east, quite in a low place, close to a pond of water, I have a thicket of Sweet Bays (*Laurus nobilis*), near which a plant of *B. anrea* was placed three or four years ago; the shoots of the Bamboo soon penetrating between the Bays as far as 12 to 15 feet from the parent plant. Last winter (which, by the way, was extraordinarily severe in our country) all the Bays perished, many of them to the very roots, the Bamboo remaining untouched, and undisputed master of the place, its bright green foliage forming a strange contrast with the dead bushes of the Bays. At a little distance, in a small islet, a dense grove of *B. anrea*, together with *B. viridi-glaucescens*, was surrounded by ice 1½ foot thick for fifteen to twenty days, without suffering in the least, some of the drooping boughs having even remained in the ice itself, and, after being disengaged from it, looking as fresh as ever. These plants, like many others in my garden belonging to the species described as hardy, have thus withstood completely unharmed the extraordinary cold of at least —12° Centigr. (10½ Fahr.). In Paris, Bamboos have endured, these last two winters, still greater degrees of cold. These examples will, I am sure, encourage many English amateurs to give a good trial to such elegant plants as Bamboos. They want only to be a little more known to become general favourites.—*E. O., Fenzl, Florence, in "Gardeners' Chronicle."*

An Ugly House Beautified.—It will not require much imagination to picture to yourself a small plain tea-caddy-shaped house, about 60 feet long and 40 feet high, with a low one-storied straggling wing, the whole covered with cement or rough cast, and the general appearance frightful. A porch of cast-iron on Oak pillars in front of the hall door, festooned with the wild Canadian Grape vine and the following other creepers, has, however, done much towards improving its appearance, and having tried many climbers for several years I have come to the conclusion that these are the best, viz.:—Virginia Creeper; this spreads over the whole front, mingling with the before-mentioned vine; *Ampelopsis Veitchii*, as a groundwork to *Clematis rubella*; Algerian Ivy (green); Golden Irish Ivy, as a groundwork, mixed with *Clematis Jackmanii* and *C. lanuginosa*; *Wistaria sinensis*; *Clematis Prince of Wales*; white and yellow Banksian Roses; *Clematis montana*, climbing and hanging in all directions; Golden Japanese Honeysuckle; and *Cotoneaster microphylla*, which covers the lower part of the house. Besides these there are *Bignonia radicans* and *Ampelopsis Roezli*, neither of which have grown well, probably from being too much crowded. The other side of the house is slightly castellated, and being much exposed is nearly covered with Virginian Creeper, Irish Ivy, and the wild Canadian Grape vine.—*J. H. W. T.*

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Herniaria glabra.—Few would expect this modest looking inhabitant (till lately) of a few botanical collections to be used in the flower garden. Such is the case, however; in the Viceregal gardens, at Dublin, it is employed as a carpet plant, and makes a very neat carpet of shining green.

Diplopappus linariæfolius.—Among plants belonging to the Aster family in bloom now none is more worthy of a place in our gardens than this. With me it grows about 15 inches high, and forms a neat dense bush, thickly studded with pretty light mauve-coloured flowers. It commenced to bloom at the beginning of September, and is now, October 8th, one of the gayest plants in my garden.—*S. T.*

Aster turbinellus.—Recently you noticed several valuable species of this genus, but omitted this one, which is one of the best plants I have now in flower. It grows about 2½ feet high, and has a very graceful habit, producing, as it does, slender thread-like branches, the ends of which are thickly studded with large handsome mauve-coloured blossoms.—*RAMSGATE.*

Helianthus ergyalis.—This is one of the most graceful of herbaceous plants, and as regards leaf effect, it is valuable for the ornamentation of the margins of shrubberies, and even for isolation on turf. It is also one of the best autumn flowering plants which we possess; producing, as it does, bright yellow flowers in such quantities as to make it conspicuous, particularly when placed in margins of shrubberies. A fine specimen of it may now be seen in one of the borders of the flower walk in Kensington Gardens.

Gunnera scabra and *manicata.*—We are informed by Mr. Jongkindt Cominck, of Aarlanderveen, near Leyden, that he has lately seen, in the nursery of M. Louis Van Houtte, at Ghent, two fine specimens of these plants. The *G. scabra*, which is ten years old, covers a surface of 14 feet across, and stands 7½ feet high. The diameter of its leaves is 4½ feet, and the leaf-stalks are 5 feet long. This plant bears twelve flower-spikes, each about 2 feet in length and 6 inches in diameter. The specimen of *G. manicata* (5 years old) bore three flower-spikes, and had leaves 1½ foot in diameter on stalks 3 feet long.

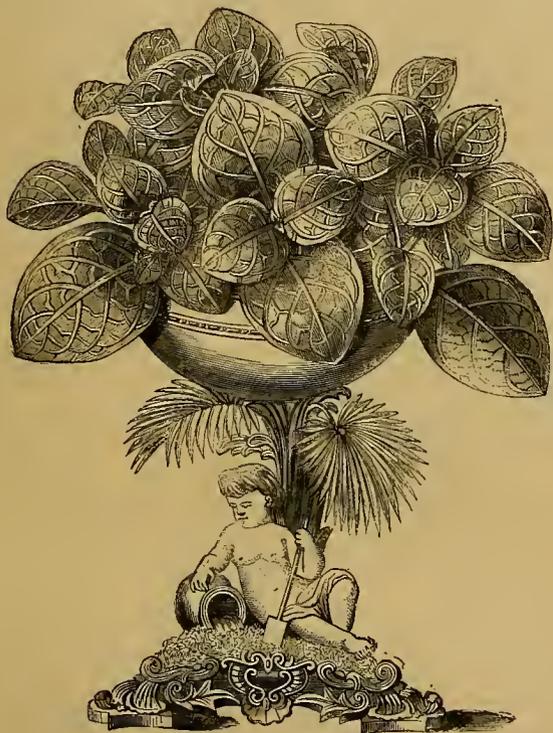
THE GARDEN IN THE HOUSE.

ENTIRE PLANTS FOR EPERGNES.

BY NOEL HUMPHREYS.

WHERE the floral decoration of the dinner table is an affair of frequent occurrence, it becomes exceedingly difficult to vary the character of the display. The bouquet, however varied—whether by trailing plants that suspend their flowers and foliage about the stem of a tazza or the sides of a deep vase, or whether by light plumes of erect grasses—still continues to exhibit the marked generic character of a bunch of cut flowers, more or less gracefully disposed, and more or less varied by well-selected adjuncts. A decorative table bouquet of cut flowers may be compared, in relation to a single plant, to a kind of "bedding" system, in which the objects are brought together in a somewhat unnatural manner. By means, for instance, of a large number of plants being packed closely together in a small geometrically formed area, a mass of colour is produced which is very striking, but at the same time strikingly unnatural. The bouquet is produced by an analogous process, in order to secure a concentrated display of colour. With this intent, flowers are gathered without any foliage of their own, and huddled more or less closely together, in order to produce the sought-for mass of colour. No foliage, as a rule, is admitted to enter into the composition, but if any, it is the foliage of plants that have nothing whatever to do with the collected bunch of flowers. When leafage of any kind is permitted to tone down the dazzling hues of the

flowers, it generally consists of a few blades of Ribbon-grass, or, incongruous as it may seem, the Roses, Pelargoniums, and Verbenas, will be "set off," as it is termed, with a few Carrot leaves, some preferring the light fibrous leaves of Asparagus for this purpose, the foliage of the *jardin potager* being decidedly in the ascendant just now where Ferns are not available. That very pretty results are often achieved in this way there is no disputing, yet, the question of congruity persists in making itself felt. But to return to the bouquet *per se*. It will be asserted that it is a charming object under almost any kind of composition, and that it is actually so very natural to cull a flower here and a flower there in a blooming garden, and when the hand will hold no more, to pause, and admire the concentration of beauty which is then clasped within the fingers, and then to reflect, with a sigh, that despite the affectionate nature of the warm pressure, that it would necessarily perish in that clasp—and that no better remedy could be applied to this sad result of the gathering than to place it in a vase with water to preserve it, and, forming as it would, a very throng of beauty, in one of its most exquisite forms—



The Silver-veined Eranthemum.

that of the flower—what more fitting and satisfactory than to place the vase and its charming cargo on the dining-room table, and so elevate the prosaic "feed" into the higher region of the elegant repast. This is the natural history and defence of "the bouquet;" but such defence, if taken up upon æsthetic grounds, is an incomplete one, especially as regards the more or less formal modern practices in bouquet making. The great flower painters have given us useful lessons in artistic bouquet making. Van Huysum, to cite a solitary instance, never introduced his favourite double white Poppy, with its finely-fringed edge of scarlet, without giving it abundant support from the soft blue-green bloom of its own magnificent foliage, which is as handsome in its rich convolutions as the glorious Acanthus that inspired the Greek artist with the device of the Corinthian capital; and he never introduced the Rose in his matchless groups, either white or red, without a pillow of its own soft-toned foliage to repose upon. It could never have occurred to him, or any other great flower painter, to make a Rose star (!) consisting of a red one to form the centre of a circlet of fine white ones, with a green glory of Carrot leaves surrounding them. It is well thus to analyze

the real nature of "the bouquet;" yet not with any view of discarding it, notwithstanding its deficiency of any æsthetic *raison d'être*; for, as often treated by the hand of taste, it is far too beautiful to be banished from the tables, whether of drawing or dining-room; and the analysis has only been conducted with the intent of showing that its presence may sometimes, by way of variety, be dispensed with, and that the introduction of entire plants in such positions is, in truth, more artistic, and capable of being made to produce effects fully as attractive. In the present state of general enthusiasm in favour of the bouquet system, it would be flat heresy to say more, either against the bouquet system or in favour of the entire plant system. All that need be added in further support of the last named, is to suggest that the noble series of plants with richly-coloured and strikingly-marked leaves are probably the best to select from for such a purpose as table decoration, as they can only be successfully shown as entire plants;—we cannot make bouquets of their gathered leaves, exquisitely beautiful though they be. Our illustration consists of an epergure, not of very satisfactory design, containing an entire plant of *Eranthemum argyroncurum*—the noble silver-veined Eranthemum.

CULTURE OF PLANTS IN ROOMS.

(Continued from p. 276.)

PROPAGATION BY CUTTINGS.

A ROOM does not afford the same facilities for speedy and certain propagation by means of cuttings as a plant house or hotbed specially designed for this purpose; in fact the object of room culture is not the production of a great number of young specimens in this way. In general, the dry air of a room presents the greatest difficulties in the way of raising plants from cuttings, and the greater number can only be raised in this way in a room by using the room hotbed previously described, or by covering them with bell-glasses. An exception must be made of such plants as delight in a very dry atmosphere. All succulent plants, scarlet Pelargoniums, &c., may be raised from cuttings without any covering in a room, and often form roots much sooner and better than in a plant house. While seeds must be placed in a dark position, in order to vegetate, all cuttings require a well lighted one, and should be placed as near as possible to the window, but they should be protected by a light shading from the direct rays of the sun until they have taken good root. This does not apply to succulents, however. Plants in a hotbed, or under bell-glasses, may be shaded by placing pieces of thin muslin over the glass. Plants not covered with glass may be shaded by placing before them pieces of paper or pasteboard. A little sunshine in spring and summer in the morning and evening, or during the whole day from January to the middle of March, will do them no harm, but rather cause them to root sooner. They should be only so much shaded that the leaves, which receive and elaborate the nutriment for the growing roots, may not become too dry. Observation will soon teach the proper time when shading is necessary. It is obvious that it must be employed earlier in bright hot weather, and later when the days are cooler, and that it is further influenced by the position of the sun at different times of the year. The total privation of sunlight by means of thick permanent shadings is highly injurious. We advise the amateur who cannot devote so much time to his cuttings as to examine and attend to them at all times of the day, to place them in a position fully exposed to the sun; but from the middle of March forward, when the sun is again beginning to grow strong, he should lightly shade them by laying a thin coating of lime-wash on the glass of the window or of the hotbed or bell-glass, or else use a wide-meshed piece of muslin as a shade.

In planting cuttings flat pans should be used, and, with respect to this operation, the following remarks will be found useful. 1. The soil should be looser, lighter, and poorer than that in which the plants are afterwards to be grown, as the object now is the formation of roots, which takes place much sooner and better in loose soil. 2. As the first roots are almost entirely formed from the nutriment supplied by the

leaves alone, the surface of the soil should be covered with a layer of clean sand, in which the cuttings are placed, and in which they form roots much sooner and better than in soil. If perfectly clean sand cannot be obtained, powdered charcoal mixed with soil may be used as a substitute. 3. One of the most important things is perfect drainage, as the cuttings should be kept in a constantly moderate condition of moisture, and air should circulate freely through the hall. Moreover sourness of the soil arising from imperfect drainage is very prejudicial to cuttings. 4. As the circulation of the air is always more active close to the inside surface of the side of the pan, the cuttings should be placed as near as possible to this part of the pot or pan.

The room hotbed should be used for cuttings of plants from warm climates, for which a temperature of from 78° to 83° Fahr. is necessary, in order to produce new roots. Cuttings of plants from temperate climes should be placed in the window, and be covered with a bell-glass, which, if possible, has an opening in the top, in order to admit of a constant circulation of air. Bell-glasses, even without such an opening, are better than sheets of glass, as the condensed moisture is liable to drop from the latter upon the cuttings, while in the bell-glasses it runs down the sides. This condensed moisture is exceedingly injurious to the cuttings. In bell-glasses which have no opening in the top, the circulation of air may be kept up by raising the side of the glass a line or two high on two or three small pieces of wood placed under the edge.

The best times for planting cuttings are as follows:—1. When, after a long period of rest, the new growth is just commencing; this especially applies to almost all evergreen slowly-growing plants. 2. When the plants are in full growth; this applies to the greater number of plants with soft wood and deciduous leaves, such as Fuchsias, Heliotropes, shrubby Calceolarias, &c. There are, however, many exceptions. With respect to the shoots from which cuttings are to be taken, we give the following practical advice:—1. Cuttings should only be taken from healthy plants. 2. Shoots with flower-buds should never be used for cuttings. If no others can be obtained, the flower-buds should be carefully cut off before the cuttings are planted, as the development of the flowers would deprive the cuttings of all the nutriment which should go to form the new roots. 3. Strong side shoots, with healthy leaves, form the best cuttings, but such as are of particularly luxuriant growth should not be selected. Healthy side shoots of slow-growing plants form roots sooner and better, in proportion to the nutriment which they receive, than luxuriantly-growing main stems. With fast-growing soft-wooded plants this does not matter, as all parts of these, if healthy, root easily and surely. 4. In slow-growing evergreens, choose rather woody side shoots of the previous year's growth. 5. Leaves with their axillary buds may often be employed as cuttings. 6. Branching shoots, or shoots more than 6 inches long, should not be used as cuttings.

The cutting should be made with a good sharp knife, so as to produce a clean cut and a smooth unbruised surface. When a side shoot of recent growth is selected for a cutting, it should have a healthy leaf left at the end. The cutting should be made immediately under the knot or swelling at the base of the leaves, but not *through* the knot or in any other place. In the case of new plants, which it is desired to increase as speedily as possible, strong healthy leaves cut off with their axillary buds, may be employed as cuttings. This is very successful with plants which have large evergreen leaves, such as Theophrasta, Rhopala, Camellias, &c., or with plants which have thick leaves, such as Gesuera or Gloxinia; and in fine with all fast-growing, soft-wooded, half-shrubby plants, such as Petunias, Fuchsias, Vitis, &c. All these are best treated in this way: First of all a proper shoot is cut off. This is then divided, by horizontal cuts under the knots, into as many pieces as there are knots. In plants with alternate leaves, the cuttings are planted just as they are cut in this way. The pans for the reception of cuttings should be prepared some time beforehand, and a few hours before the cuttings are planted they should be watered, so that the layer of sand may be moist, but not wet. The greater number of cuttings should be planted immediately after they are prepared, so that the surface of the cut may not have dried up.

A hole is made in the sand with a small pointed stick, and the cutting with the leaves inserted to a depth of from one-third of an inch to an inch and a half, according to its size. The sand is then gently pressed around it. When the pan has received a sufficient number of cuttings, it should be carefully watered with a fine rose, so as to settle the sand evenly around the cuttings.

Among the plants recommended for room culture, Cactuses, Stapelias, Aloes, and other succulents, are the only plants of which the cuttings should be allowed to dry in a sunny place for some days before they are planted. Moreover, they should not be watered immediately after planting. The cuttings of the various kinds of Ficus, which abounds in a gummy or milky sap, should be washed in lukewarm water, and all the exuding sap removed, otherwise it will cover the cutting and hinder the absorption of moisture. With regard to cuttings of plants from warm climates, we have already remarked that they should be placed in the room hotbed to cause them to form roots. The pans containing these should be plunged up to the rim in sawdust or moss. Among the cuttings of plants from temperate regions a distinction is to be made between those which require to be covered with a bell-glass, in order to secure a sufficiency of moisture for the production of roots, and those which do not require any such covering. All evergreen cuttings require to be covered with glass, as do also cuttings of all kinds of herbaceous flowering plants. The former generally take a longer time to form roots, and, if uncovered, would gradually lose all their leaves and perish in the dry air of the room. The latter form roots quickly, but their tender leaves can only for a short time endure the pernicious influence of the dry room atmosphere. Among the plants, the cuttings of which require no covering in the room, are all succulents, Pelargoniums, monthly Roses, Fuchsias, Hydrangeas, &c., if these are planted at the commencement of the new growth. The writer has even placed cuttings of the scarlet Pelargoniums in a sunny window in spring without any covering, which succeeded perfectly under this treatment. Cleanliness, ventilation, re-cutting, and careful watering, are, in addition to the shading already spoken of, the chief conditions of a successful result.

—*Dr. Regel.*

(To be continued.)

THE ARBORETUM.

HARDY TREES AND SHRUBS.

BY GEORGE GORDON, A.L.S.

THE RED-FLOWERED MAPLE (ACER RUBRUM).

THIS forms a handsome smooth-stemmed tree, which in England grows from 30 to 40 feet high, with diverging slender branches, but in the Maple swamps of Pennsylvania and New Jersey it attains double that height. Whether we regard it for the beauty of its flowers and opening leaves in the early spring, or for its glaucous leaves and red fruit in the beginning of summer, or the red tint of its decaying foliage in the autumn, it must be reckoned as one of the most ornamental of the Maples. The red-flowered Maple extends over a great part of North America, being found in most woods from Canada to Florida. It, however, only flourishes in damp situations; it was first introduced in 1656. The leaves are acutely three and five-lobed, cordate or rounded at the base, smooth and bright green above, downy and glaucous beneath, and on long slender reddish footstalks; the lobes are deeply and unequally toothed on the edges and with acute recesses; the flowers, which appear some time before the leaves in the spring, are small, dark-red, and produced in great profusion in conglomerate clusters at the extremities of the branches. The fruit or keys are rather small, smooth, and bright red before they are ripe, with straight and rather extended wings. Length of a full-sized leaf 6 inches, including the footstalk, which is 2½ inches long; breadth of leaf, 3½ inches.

THE WHITE OR SIR CHARLES WAGER'S MAPLE (ACER ERIOCARPUM).

A NOBLE-LOOKING, open, deciduous tree, from 50 to 60 feet high, with a large but short stem, and graceful wide-spreading branches and slender declining branchlets, which, in early spring, are covered with a profusion of flowers. It is a native of North America, on the banks of rivers from New England to Georgia; it was first introduced in 1725. The White Maple grows well in most soils and situations, but thrives best in one that is rather moist. The leaves



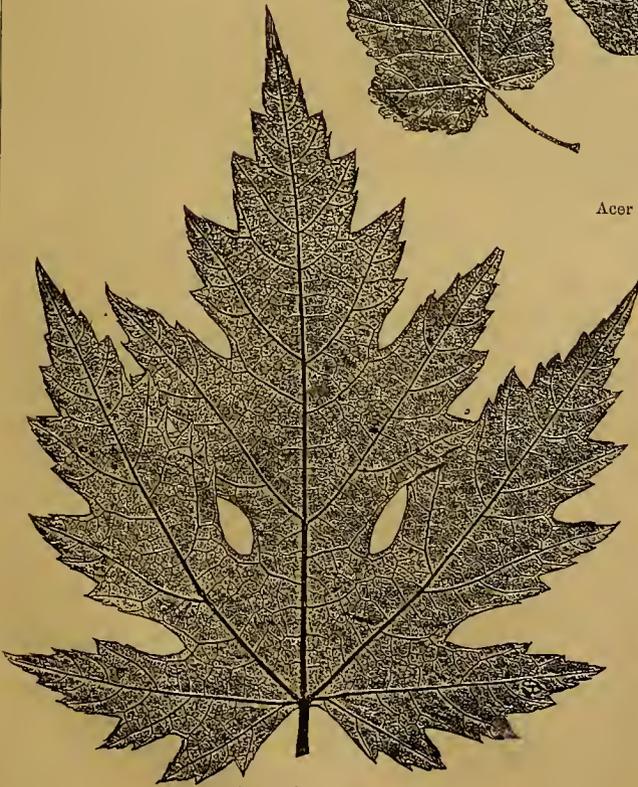
Acer rubrum.



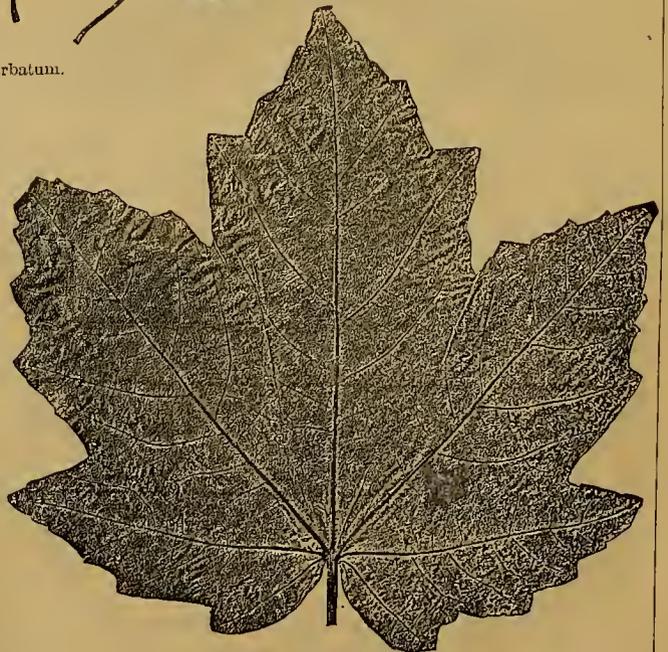
Acer platanoides.



Acer barbatum.



Acer eriocarpum.



Acer Loudoni.

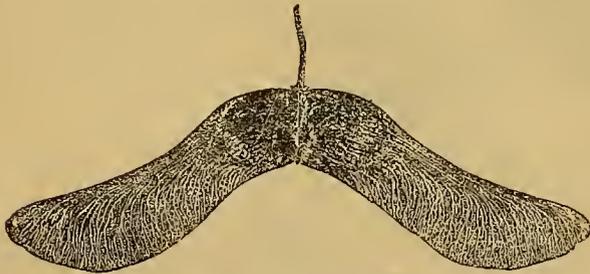
are palmately five-lobed, with large, acute, double serratures on the edges and open round recesses. They are truncate, or nearly so, at the base, bright green above, glaucous beneath, and except when very young quite smooth on both surfaces, and on long, slender footstalks. The lobes of the leaves are acute, deeply cut and unequally and doubly toothed, with the three outer lobes the largest. The flowers are small, pale yellowish pink, and produced in great abundance in March and April in small, compact axillary groups, which are almost, or quite, sessile. The fruit or keys are large, woolly, and of a pale yellowish colour, with round carpels, terminated by large, curved, thick wings, which are rather spreading. Its synonyms are *Acer dasycarpum*, *glanum*, *macrocarpum*, and *floridum*. Length of full-sized leaf, 8 inches, including the footstalk, which is frequently 3 inches long; breadth of leaf, 5 inches.

THE BOHEMIAN MAPLE (*ACER LOUDONI*).

This forms a fine compact round-headed tree, from 30 feet to 40 feet high, with stiff ascending branches and short stout divergent laterals, which in May are terminated by clusters of flowers. It is a native of Bohemia, and grows freely in any kind of ordinary soil; it was first introduced in 1840. The leaves are large, acutely and rather deeply five-lobed, with a few blunt serratures on the edges, and cordate at the base; they are deep green, smooth above, and thickly covered with whitish down beneath, especially along the veins. The decaying leaves, naked wood, and prominent buds are all of a fine brown colour in the end of autumn. The flowers are produced in somewhat erect many-flowered sessile corymbs from among the scales of the terminal buds, and are of a whitish colour. The fruit or keys are small, quite smooth, and on long slender footstalks, with thick carpels terminated by small oval wings, which are rather wide spreading. Length of full-sized leaf, 10 inches, including the footstalk, which is frequently $4\frac{1}{2}$ inches long; breadth of leaf, $5\frac{1}{2}$ inches.

THE NORWAY MAPLE (*ACER PLATANOIDES*).

A HANDSOME free-growing deciduous kind, from 40 feet to 50 feet high, with a dense round head, which, when covered with its bright yellow flowers in May, just before the leaves begin to expand, forms



Fruit of *Acer platanoides*.

a very beautiful and striking object. It is a native of Europe, from Switzerland to Norway, grows freely in almost any kind of soil and situation, and is well suited for planting along the sea-coast. It also has the merit of never having its leaves injured by insects. It is increased either by seeds or layers; it was first introduced in 1683. The leaves are large, rather angularly five-lobed, cordate at the base, deep glossy green above, quite smooth and shining on both surfaces, thin in texture, and on rather short footstalks, and when the petiole is broken a milky sap issues from it. The lobes of the leaves are broad and acutely pointed, and, with the exception of a few very sharp-pointed coarse serratures, entire on the edges. The bark on the young shoots at first is of a bright green, but it afterwards changes to a reddish-brown dotted with white points, and the leaves, just before they fall off, become of a fine yellow, or yellow tinged with red. The flowers are of a bright yellow, quite smooth, and are produced in great abundance in rather erect-stalked corymbs, just before the leaves in May. The fruit or keys are large, flat, rather thin, and quite smooth, with ample wings, which are somewhat curved and nearly horizontal. Length of a full-sized leaf $6\frac{1}{2}$ inches, including the footstalk, which is 2 inches long; breadth of leaf, 7 inches.

THE CAROLINA MAPLE (*ACER BARBATUM*.)

This forms a small bushy tree, from 12 to 15 feet high, with stiff branches, and dark brown shoots, which are tinged with a glaucous violet bloom when very young. It is a native of North America, from New York to Carolina, but mostly in the deep Pine and Cedar swamps of New Jersey and Carolina, and consequently requires to be

planted in a moist situation, for it only lingers and soon dies when planted in a dry one. The leaves are rather small, and on longish red footstalks, but they vary very much in shape and size, some being ovate-pointed and only visibly lobed, while others are broadly and distinctly three-lobed; all of them are, however, slightly glaucous, veiny, and of a deep glossy green above, pale beneath, and thickly and unequally toothed on the edges, and, except when very young, quite smooth on both surfaces. The flowers are in sessile corymbs, the female flowers being on simple pedicels, while the male ones have branched pedicels. The fruit or keys are rather small and smooth, with the wings nearly erect or parallel. The synonyms are *Acer trilobatum*, *hybridum*, and *Carolinianum*. Length of full-sized leaf, $3\frac{1}{2}$ inches, including the footstalk, which is $1\frac{1}{2}$ inch long; breadth of leaf, 3 inches.

Wood v. Iron.—The other day you had an extract from an American source setting forth the superiority of wood over iron, especially for drain pipes. Calling about the same time to set out the foundations for some fruit houses at Braestead Park, Sevenoaks, Mr. Tipping, junior, directed my attention to a length of drain pipe that had just been raised from the ground. It was a tree some 6 feet or 8 feet long, and 9 inches in diameter, possibly of Oak or Ash, in the centre of which a 3-inch water-way had been bored; but it was sound as when growing, though black as one's hat. Mr. Tipping calculated that this piece of wood must have been in the ground more than a hundred years; so as to the durability of wood sealed from the air there can be no doubt. But the question presents itself, How was a tree of that length, at that time, bored? We could cope with the difficulty now, if it would pay, but the superior quality of our stoneware sanitary pipes renders it unnecessary to do so, as under the changing influences of wind and weather they will be found more durable than iron. The fact, however, is interesting and worthy of record.—W. P. AYRES.

The Duke of Argyle's Tea Tree (*Lycium barbarum*).—Did you ever see a living "burning bush"? I do not mean the tricolor Pelargonium of that name, but a veritable cloth of scarlet fruit. If you have not, let me commend you to this "Willow-leaved Box Thorn," as I and a friend stumbled against it the other day in a garden in Newark. You know the American, or as it is sometimes called, the Whipcord Weeping Willow; picture a plant of this some 8 feet high with its branches hanging down and clothing an arbour that would seat some half-dozen people, and each branch thickly set with brilliant scarlet fruit each as large as a filbert, and you will have some conception of the beauty of this graceful tree when in its best state. So lovely was it that I intended to have it photographed; but before this could be done a cold night or two intervened, which had the effect of strewing the ground with the brilliant fruit. No photograph was therefore taken of it, but at first sight nothing could be more beautiful. It is said "beauty is only skin deep," and certainly in this instance it was not persistent.—W. P. AYRES.

NOTES AND QUESTIONS ON TREES AND SHRUBS.

A Good Carpeting Shrubbery Plant.—M. E. André, in the *Illustration Horticole*, recommends *Carex divisa* as an excellent subject for covering the bare places under trees in winter. At a season when few things in the shape of green leaves are to be seen, a carpet of this *Carex* relieves the dreary bareness of shrubbery-ground in a most effectual and agreeable manner. The plant is common in many parts of England, grows about a foot high, and forms tufts of deep-green leaves, which preserve their verdure in the midst of frost and snow. It is easily and quickly increased by division of the tufts.

Handsome-leaved Shrubs.—On entering the Cambridge Botanic Garden the other day, I was particularly struck with what appeared in the distance to be a dwarf bushy Liquidambar. On coming closer I found it to be *Ribes flavum*. The leaves were of a dark red, approaching crimson, and the plant was one of the most effective in the whole garden. *R. aureum* and *palmatum* were among the next best in colour. Either of these in groups or dotted singly among other shrubs would add an autumnal tint of great brightness nearer to the ground than is readily obtained by any other shrub.—E.

Are Beech Trees Struck by Lightning?—There is not the slightest ground for supposing that the Beech is exempt from injury by lightning. There are some magnificent Beeches on the lofty ridge near Newnham-on-Severn, called the Blaise Bally, just within the Forest of Dean. I remarked a short time ago that some of these trees were scamed from top to bottom with clean straight cuts 3 or 4 inches wide, and 2 or 3 inches deep. They are old wounds, and the bark has partially closed over them.—H. FOWLER. [There are various well established instances of Beech trees being struck by lightning.]

Flowering Shrubs.—Will you kindly recommend me a few handsome flowering shrubs, suitable for planting in October, upon the banks of a Fernery, in a situation very slightly overshadowed by Oak trees, and in a climate where the *Adiantum Capillus Veneris* survived in the open air last winter.—M. T. W., *Bryn-Celyn, near Pethell, Carnarvonshire.*—[The following will doubtless answer your purpose. viz.:—*Andromeda floribunda*, *Perpetua*, *Kalmia latifolia*, *Leycesteria formosa*, *Cydonia japonica*, *Weigela rosea*, *Cytisus supina*, *Cistus laurifolius*, *Rhododendrons*, *Azaleas*, *Laurustinus*, *Cotonaster microphylla*, *Spiraea callosa* and *Nobleana*, *Loucothoe Catesbaei*, *Erica carnea*, and other hardy Heaths.]

THE MARKET GARDEN.

MARKET GARDENING FOR THE SUPPLY OF PARIS.

BY A PARIS MARKET GARDENER.

CHAP. I.

To produce much in a limited space, to furnish vegetables for the consumption of a thousand individuals by the culture of a piece of ground which, if managed in the ordinary way, would not yield enough for fifty, such is the problem which is daily set before the market gardener of the suburbs of Paris. The problem every day finds its solution, although difficulties accumulate with the extension of the vast city, which, having outgrown its former limits, now covers with new buildings the ground but lately cultivated, and forces those who supply it with vegetables to seek space and sunshine in more distant localities.

The Paris market gardener occupies a piece of ground seldom under an acre and a half or over two acres and a half in extent. He is rarely the owner of the soil, and his rent is higher in proportion as his ground lies nearer the Parisian markets, and consequently nearer the centre of his business. Nevertheless it must be exceptional circumstances or a bad knowledge of his profession that will prevent him attaining a fair competence after working a certain number of years. Competition keeps up amongst the market gardeners a useful spirit of emulation. The early crops bring in a profitable return. In the height of the season they supply the cultivator with the means of living and paying his expenses; while the late crops bring in a fresh harvest of money.

The ground is admirably adapted to the many crops required. Sandy soils, when sufficiently manured and skilfully cultivated, produce the early crops; clayey soils, under the same conditions, do not yield crops till later in the season, but when the sandy soil has furnished its early produce, and can no longer retain the moisture necessary for vegetables, the clayey soil begins to yield its crops, and produces them in the midst of the greatest heats, on account of its property of holding water like a sponge, and retarding the decomposition of manure.

The smallest portion of a market-garden should not remain empty for twenty-four hours. Every plant taken up should at once be replaced by another. As market-gardens are always close to dwellings and populous centres, there is no want of manure, but this is not sufficient to accomplish the objects of this mode of cultivation, for nature must be forced, and we must have spring in the depth of winter, and summer in the short and uncertain days of spring. The soil of the market garden has no rest; although it feeds the most exhausting plants, its owner restores to it, in proportion to its losses, the elements which it needs to recruit itself and supply its crops with fresh nutriment. In the manure heap it finds at the same time heat, nitrogen, carbon, hydrogen, sulphur, phosphorus, and the calcareous salts which it requires. Wooden frames covered with glazed lights shelter the young plants from the cold air during the winter season. A warm moist atmosphere favourable to vegetation prevails under these frames, for the air inside, warmed by the heat of the sun and the fermentation of the manure, does not become chilled; experience having shown that although solar heat, along with light, penetrates the glass, the heat inside cannot pass through it, but remains confined. Besides these frames glass cloches are used for the same purpose.

The form of a market garden is generally that of a rectangle more or less elongated, and is the most suitable form, as being the easiest to lay out and inspect. The ground should be enclosed and protected from intruders, whether men or beasts, as well as sheltered from the winds. The best and the usual fence is a good wall. The ground should be laid out in rectangular beds with their longest side facing the south and properly squared; those which are intended to receive frames should have a length of $68\frac{1}{2}$ feet for fifteen frames, including a pathway. They are arranged end to end as far as the space from east to west will allow. When a fresh line of $68\frac{1}{2}$ feet cannot be obtained, transverse lines are made in the same manner facing the west. These are called the *carrés*.

The dwelling-house of the proprietor should be as close as possible to the high-road, and at a south angle. It generally

consists of a cellar, which serves for a store-room, a ground floor, and an upper storey. At one side are the stables, cart-house, and shed for implements; in front is an open space containing the well, the gin, the steam-pump, the reservoir, the tank for washing vegetables for market, and the outlet from the dung-heap. Water in abundance at all times is absolutely indispensable to a market garden. Before 1867, all gardens of this kind were watered in the following manner:—A force-pump, worked by a gin, raised the water over-ground by means of a pipe into a tank, which fed a series of barrels buried in the soil up to their rims, and connected with each other by earthen pipes joined together with bitumen; these pipes did not come into the barrels, but were buried at the depth of 16 inches or 20 inches, and had a leaden pipe inserted into them, furnished at the end with a stop-cock or a cork close to each barrel, by means of which the barrels were filled when required. In some establishments the barrels were all connected with each other by pipes so that they were filled in succession; this was a bad plan, as the last barrel could not be filled until the others were, while the by the first system, either one barrel or all could be filled at same time. The barrels held each about forty-four gallons or more, and were hooped with iron and tarred on the outside to prevent them rotting. They were sunk at the distance of about 35 feet from each other, or about the length of every four beds. The water was taken from them in copper watering cans. I have induced many of my confrères to adopt a system of watering less primitive and much more advantageous. The barbarous system of barrels involves a waste of ground that might be cultivated; the workmen who are employed in watering are all day barefooted on the wet ground; their work takes up much time, and is perhaps the most irksome part of their business. How many pleurisies, colds, and rheumatisms have been contracted in this way! The barrels, whose tops were level with the ground, have been the cause of deplorable accidents. There is scarcely a year in which the papers have not recorded the deaths of children or old people by drowning in these barrels. All human motives—appearances, for the ground watered by the new method no longer exhibits the muddy and noisome sinks which were found about every barrel under the old system; profit, for there is so much ground gained for cultivation, and so much hand labour saved; and, lastly, duty, for the danger of disease and death is abolished—all human motives, I repeat, should induce market gardeners to adopt the new system of watering.

In this system, which will be described in detail further on, the water, raised by a force-pump to a height of 15 or 18 feet above the surface, is discharged into a sheet-iron reservoir of 65 or 70 cubic feet in capacity, more or less. The earthen pipes are replaced by pipes of stone-ware, firmly fastened together by a split ring dipped in cement, or else by pipes of cast-iron or lead. The barrels are abolished, but in their place is substituted a tap, on which is fastened a hose of india-rubber, about 48 feet long, furnished at the end with a jet and a rose. The costly stop-cocks of ordinary taps are replaced by a short piece of india-rubber tube, fastened on the tap by means of a collar, and closed, when not in use, with a press screw. The hose is connected with this by means of a socket, which is thrust into it and held fast by the elasticity of the india-rubber. By means of this system the workman waters with his feet dry, and without wetting himself, or stooping; the absence of fatigue also causes him to work willingly at this, the most indispensable part of his business, which formerly he undertook with reluctance, in consequence of the exhaustion and dangers with which it was attended.

The market gardener cultivates all the vegetables which grow in our climate; nevertheless, if he confined himself to those which are of easy culture, and which demand for their development a great length of time, he would not pay his expenses. Therefore he restricts himself to those the cultivation of which is comparatively rapid, and whose natural time of growth he diminishes by means which he employs to secure the temperature and degree of moisture desired. To these he adds some annuals from warm countries, which are much esteemed by the Parisians, and which become finer and more delicate under artificial cultivation.

The pursuit of market gardening reckons amongst it

members none but respectable and hard-working men, all of whom, with the two indispensable auxiliaries of health and good conduct, accomplish the object of their lives. Their wives and children gather and sell the produce, and their industry and energy are amongst the chief conditions of success. All the commercial dealings of the market gardener are ready money transactions. As we said before, he has two problems to solve; to be either the first or the last in the season with a certain article, and to do either requires some intelligence. In the intervening time he merely carries on a running business, which, however, pays his expenses and is not to be despised. For some years past much progress has been made, and many new vegetables introduced into cultivation, especially since the markets have been opened to the produce of the south, which is brought by rail to Paris, and against which we have to compete. We must not hide the fact that this state of things will continue, and perhaps extend itself, and it is a warning to our market gardeners to bestir themselves, and make improvements; their interest and the honour of the craft require it of them, and we have no doubt they will not be found wanting.

(To be continued.)

THE KITCHEN GARDEN.

THE POTATO DISEASE.

OF all the remedies or rather preventives that have yet been devised for warding off disease, that of perfect seed saving is the safest. With thoroughly matured seed planted at the right time, especially of early varieties, you may calculate upon harvesting a crop before the disease appears, and even with late crops, perfect maturation of the seed at this season, and proper storing afterwards, are most important points. But in all cases pitting and stering in bulk must be wholly ignored. A dry floor, if lighted all the better, where the Potatoes can be stored five or six deep, and turned frequently through the winter may do very well, and if they lie singly all the better, but to allow seed Potatoes to sprout, and then to cut the sprouts off is a great mistake.

In the degeneracy or wearing out of varieties I do not believe, except so far as they may be affected by bad seed saving; Scotch and Yorkshire Regents are as good, sound and healthy now as they were before the disease was known, and no more can be said of the more modern introductions. I was told a short time ago by a gentleman residing at Castle Donington, that he and his father had grown the old Ash-leaved Kidney in the same garden, and without change of seed for more than half a century, almost without knowing the disease at all; the ground is a fine loam, rather strong, but well drained and cultivated. Here, then, we have a strong argument against degeneracy and loss of constitution, in fact we may say a complete reply, for the Ash-leaf is certainly one of the most delicate varieties in cultivation.

Success in the growth of the Potato, as I have already said, hinges almost solely upon the preparation of the seed, and next upon the concentration of the energy so stored up, until such time as it can expend itself in its proper place—the ground. To this end we have those who advocate autumn planting, and others very early spring. For my part, and reasoning from the success of an accidental experiment this season, I am fortified in saying that with well prepared seed, late spring planting is the best for the early varieties. The statement, I grant, sounds anomalous, but I will state my case. In the spring of the present year, finding myself with a larger quantity of seed of the Ashleaf varieties, viz., Veitch's, Rivers', Myatt's, the old, and Princess Eugene, than I had ground to plant, I was obliged to wait until I could obtain some. This did not happen until near the end of April, and before it could be prepared by digging and dressing with soot, May had come upon us. At that time my neighbours' Potatoes were well above the ground. In the middle of May we had three or four consecutive frosts, which cut the early planted Potatoes to the ground. At that time the most forward of my sorts were breaking the surface, and consequently escaped uninjured, while my neighbours' never recovered the severe check which they received. Early in July I began to dig for family use, and in the end of August I harvested a capital crop of tubers. The ground planted was less than 600 square yards, and from it I gathered nine sacks of what the dealers would call fine, handsome "ware," nearly two sacks of "seconds" greened for seed, and I sold twelve pecks of small and diseased as pig feed, the diseased growing principally where the ground was shaded from the south by tall trees. It will thus be perceived that I obtained more than two sacks of Potatoes from each

hundred square yards of ground, a fine crop of Kidneys in any season, but remarkable when almost all others have failed. These are stored in cement casks, covered down with finely sifted cinder-ashes, and being examined repeatedly, are found to keep in the most satisfactory manner. There was no sweating and tainting before the Potatoes were put into the casks, and to that I attribute in a great measure their almost total exemption from disease. I may say the best of my seed at the time of planting had never lost a bud, but the young shoots were green as a leek, and as large as full-sized cobnuts. The ground being warm at the time of planting, these received no check, and the question suggests itself, is it not better to do the work quickly, and through what may be called late planting, than by early work run the risk of complete failure? Mark, I must have a full crop, and for that purpose I cannot afford to run the risk of having the crop crippled by late May frosts. A crop of early Potatoes is a different thing; but from early varieties I look for the main crop and winter supply.

The moral of this experience is just this: Seed thoroughly matured, the ground thoroughly prepared and planted late, say the last week in April and the first in May, and the crop so attended to that it shall be stored away by the end of August. For this purpose it is indispensable that the seed shall be thoroughly matured by full exposure to light, and that the temperature of the store shall be so low as scarcely to excite the tubers into growth until the time of planting. The same rule may be observed with later varieties, but the influence of soils and situations apart, there must always be the risk that the season before the disease will not be long enough for matured growth to shield them from attack. W. P. AYRES, *Newark, Notts.*

Potatoes in Holland.—The increase of the Potato crop in the Province of Gröningen (North of Holland) has become exceptionally important during these last few years, in consequence of the number of Potato flour mills established there. The Potatoes are planted in old turf ground which is intersected by small canals, by means of which their transport is considerably facilitated. In the villages of Wildervank, Veendam, Muntendam, and Hoogezand there are thirteen mills, which crush daily more than 750 lasts, producing over 251 tons of flour every day, the greater part of which is expected to be sold in English markets, as very little is used for glucose (syrup) and home consumption. A great activity prevails in the mills at the present time, owing to the extensive disease among the Potatoes; nevertheless the crop is large.

White Spanish Haricot.—This is a delicious vegetable, highly spoken of by many persons for some years past, but not yet sufficiently well known. All who have tried it are loud in its praise, and it should be grown in every garden. We are quite persuaded that we are rendering our readers a real service in recommending it to their notice.—*L'Illustration Horticole.*

The *Gaulois* is responsible for the following Onion story:—"M. About has always had an invincible antipathy to Onions; when he even smells this vegetable he swoons. Now, it happened that at the first meal M. About had after his recent arrest a dish was brought him seasoned with Onions. He requested the dish to be removed, and gave an account of the invincible dislike he had for the odour. Will it be believed?—from that moment nothing was brought him which did not smell of Onions. In vain he requested those about him not to tease him in that manner, and to give him bread which had not been cut with a knife smelling of Onions. It was of no use, and this poor and paltry refinement of vengeance has not yet ceased." As the advocates of garden products, we must say that we think the poor Onion the worst used in this case. We happen to know one or two authors who, unlike M. About, are passionately devoted to the odorous bulb, skilfully and judiciously subdued, of course. Perhaps M. About in his eastern days was forced to partake of such strong doses of the less delicate species which the inhabitants of southern countries delight in, that he has lost all taste for this useful esculent.

A Garden Climate.—Cintrá lies on a slope looking towards the Atlantic, which is about six miles distant. In this favoured spot tropical and temperate vegetation flourishes equally well. Oaks and Palm trees stand side by side; gigantic Cork trees alternate with Orange and Lemon trees; the Magnolias are the size of young Pines; the hedges are made of prickly Pears and Alocs, with wild Geraniums growing between them. The climate is delicious. The thermometer, even at midsummer, is seldom above 75°. The hills round Cintrá are covered with villas, almost every one of which is situated in a garden full of every species of flower. Mr. Beckford's house and garden, where he wrote "Vathek," have been purchased by a London tradesman. In place of Beckford's house, which had fallen into ruins, he has built a very ugly sort of Chinese pagoda. The garden, however, which surrounds the structure is one of the most beautiful it is possible to conceive.

POTATOES will be scarce during the coming winter:—let us hope it may have the happy effect of taking some of the starch out of the numerous family of the Stuckups.—*F. W.*

ASPECTS OF VEGETATION.

ASPECTS OF VEGETATION IN NUBIA.

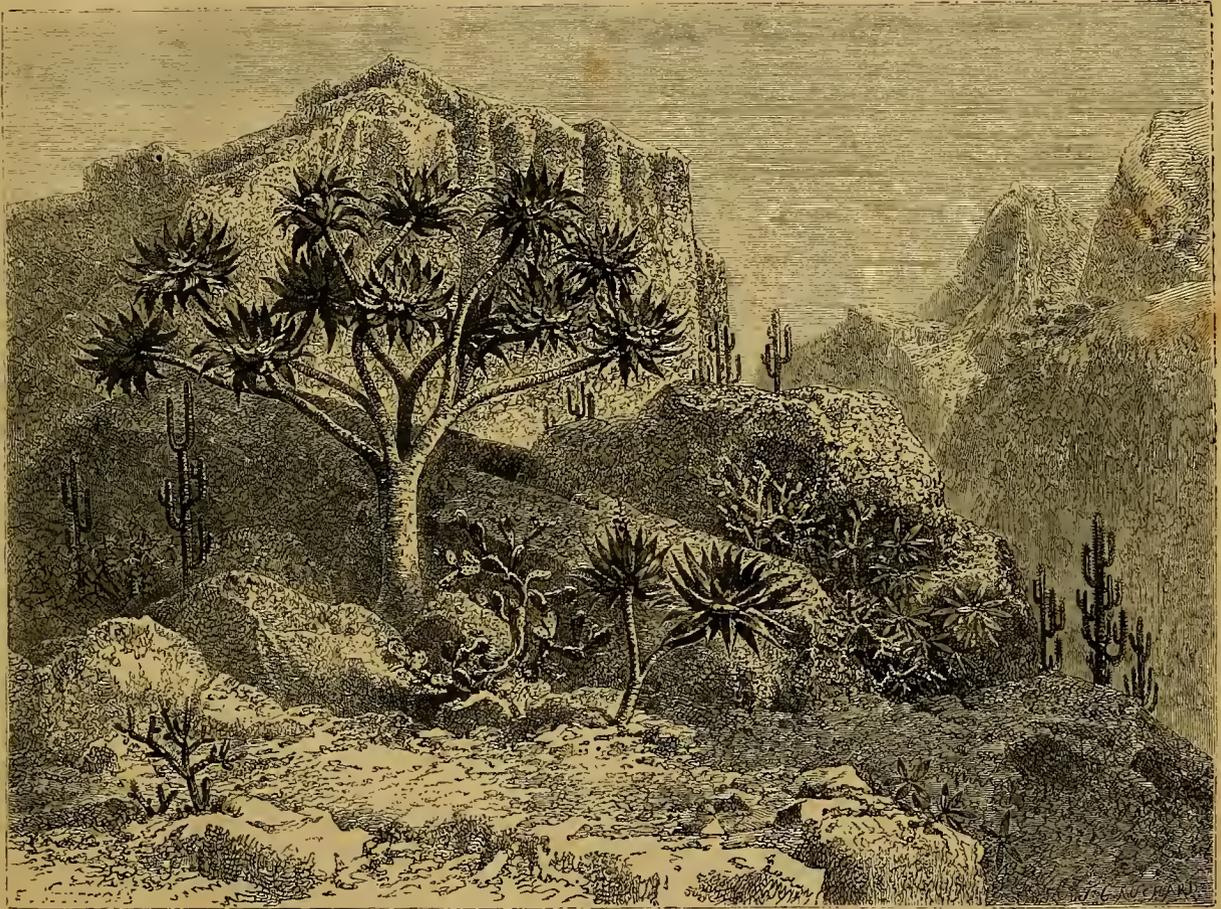
A DESERT of sand and rocks, with some small fertile oases, characterises what is termed Lower Nubia. Upper Nubia is more varied, especially in the neighbourhood of the Nile, where there are vast plains, on which are grown cotton, coffee, dates, tobacco, indigo, and different kinds of grain. The dry rocky hill-sides furnish little in the way of vegetation.

The large plant seen in the foreground of our illustration is the *Aloe dichotoma*, a very scarce kind in collections, though common in Nubia and Abyssinia. It has a peculiarly smooth stem, and branches out regularly. This and similar species are admirably adapted for this dry country, as they require less nourishment and stand more drought than most other succulent plants. One of the chief features of Nubia and the

PROFESSOR OWEN ON KEW.

(Concluded from p. 308.)

THE main end or drift of Dr. Hooker's evidence before the Scientific Commissioners is to impress upon them the necessity of the transfer of the collections of dead plants (the palæontological part or the fossils excepted) in the botanical department under the trustees of the British Museum to the botanical department under the Board of Works. Evidence before the Scientific Commission: "Question 6,683. Would you contemplate any separate function for the two museums, or that they should have common functions?—Answer. With regard to one very important branch of botany, the palæontological, I think it would be best that it should remain in or near London, it being as essential to geologists as to botanists. Question 6,684. Besides, therefore, the transference of the collection of fossil botany to South Kensington, is there any other change which you would desire to make in the museum at Kew?—Answer. No; I would still



Aloe dichotoma and other examples of Nubian Vegetation.

neighbouring countries, often spoken of by travellers, are the tall Cactus-like Euphorbias which they contain. *E. abyssinica* is the form most commonly met with; it is a fast-growing plant with deep angular stems; the small Euphorbia on the left in our illustration is *E. tetragona*. The mass of foliage immediately on the right of the small Aloe in the centre of our illustration is that of *Synadenium Grantii*, also a form of Euphorbia. It has beautifully reticulated, bright green, fleshy foliage, quite different from the usual African type. It is a very fast grower; a specimen of its wood, brought to Kew by Captain Grant, after being in the herbarium more than a year, was transferred to the garden, and soon grew into a fine tree. At the base of the large Aloe may be observed a Prickly Pear. This must have been an importation to Nubia, the whole Cactus tribe being American; under an African sun, however, they soon make themselves at home.—J. CROUCHER.

keep Kew as the great scientific working herbarium, to which, as hitherto, all botanists must come, and I think that the herbarium at the British Museum should be named comparatively and consistently with that of Kew. Question 6,685. You would contemplate, therefore, that the two establishments ancillary should be under one common head?—Answer. I think that the two herbaria should be re-arranged under one head, and be brought under one system of management." In other words the abolition of the botanical department in the British Museum is recommended, and its reduction, there, to an appendage of the department of palæontology. Also that the botanical department to be transferred from London to Kew should be under one head, that is to say, the director of the botanical department under the Commissioners of Works. It is contemplated agreeably with my report to the trustees in 1859 that the botanical department shall take its share in the instruction of school teachers in the elements of natural history, by a free course on the principles and economical applications of botany. This application of the national

collections of dried or dead plants is expressly opposed by Dr. Hooker in his evidence before the Scientific Commissioners, recommending their transfer to Kew. Question 6,665. "Has anything yet been done in the way of illustrative conversations or lectures to persons visiting, or to particular or special classes, visiting the museum?—Answer. Nothing" (the "museum" is that of the scientific or herbarial establishment at Kew, the subject of the preceding question). Question 6,698. "Do you think it would be possible for the officers of the gardens to combine the functions of giving public lectures together with their present duties?—Answer. I think it would be possible for certain able and active officers to do so, but I think it would be highly inexpedient to require it of them." The evils here threatened, in my judgment, to science, to the integrity of the British Museum of natural history, and to its extended uses in aid of national education, compel me, unwillingly, to submit to the consideration of the First Commissioner of Public Works, evidence of what may appear to him, as to others, of the influence of the amount of work now done at Kew, in connection with its herbaria, upon the works originally contemplated to be done there in connection with the gardens of living plants.

The scientific work of which a herbarium is the instrument has been defined by a great wit and original thinker as the "attaching barbarous binomials to dried foreign weeds." This roughly expresses the net result of the application of a museum of dried plants; it is the proper and authoritatively assigned labour of the Keeper of the Botanical Department under the Trustees of the British Museum. But an estimable naturalist, Gilbert White, has given a better and fitter opinion on the subject: "The objection to (herbarian) botany is, that it exercises the memory without improving the mind or advancing any real knowledge, and where the science is carried no farther than a mere systematic naming and classification, the charge is too true. But the botanist who is desirous of wiping off this aspersion, should be by no means content with a list of names, he should study plants philosophically; should investigate the laws of vegetation; should examine the powers and virtues of efficacious herbs; should promote their cultivation, and graft the gardener, the planter, and the husbandman upon the physiologist." To raise the "weed" to the condition of a plant, useful to man's estate, is the work of a director of a national collection of living plants in adequate gardens and buildings with all appliances for culture, and requisite experiments, liberally provided by the nation to that end. Most of the plants now of greatest use to man were originally weeds. Almost yearly are additions made to the list of these inestimable developments and conversions. We look in vain for any evidence of such as represented by new flowers or fruits raised at Kew (at least since the directorship of the Aitons, in the time of Knight. "The Horticultural Society," originated and supported by voluntary contributions, supplies in its degree the absence of the practical applications to that economical end in the Royal Gardens, yet this, surely, is the true and legitimate scientific work of the director and his staff. The results of competitive exhibitions of new and valuable kinds of fruit, grain, grasses, succulent and other vegetables, flowers and other plants of ornament, are the results of applied physiology, and the prizes are the due reward of science and skill in this department of Botany. Although no new variety of fruit or flowers appears to have been developed at Kew, the director in his "Report," issued in the present year, states, that "During the past year about 10,000 specimens have been added to the herbarium." Dr. Hooker assigns as a reason for maintaining a first-rate "herbarium and library" at Kew, "that they are essential to Kew for giving to botanists and gardeners the information daily demanded of us." The alleged instances in which reference to an herbarium is essential to supply the information daily demanded by gardeners, lead me respectfully to suggest that official inquiry should be addressed to the leading gardeners who now mainly fulfil the physiological work for which the gardens at Kew were destined. In order, *e. g.*, that the department of State responsible for such application should know the kind and degree of information and aid which they derive or have derived from the national establishment. One of the legitimate functions of the botanical establishment under the Commissioners of Works, is to endeavour to naturalise rare, useful, and beautiful plants. This endeavour implies time devoted to observation, skill, care, and experience, guided by scientific knowledge of the power and properties of living plants, and their relations to soils. In every experiment a failure may be anticipated, and no blame attaches to the officer experimenting with State means and funds, if those required for the experiment be not unduly exceeded. To naturalise the Deodar Cedar, or a fine kind of Lime, was as legitimate a duty of the director of Kew Gardens as the endeavour to naturalise the Araucaria; and the necessary number of a rare exotic ought not to be grudged in the attempt. But the experiment has been tried by planting young Deodars and Limes as an avenue, along a vista

described in the director's report as "rather under a mile in length." In consequence of the ill-success of the experiment, he further reports:—"A row of trees has been planted along the Syon vista, between the Deodars and the path, consisting of Douglas Pines, alternating with evergreen Oaks of two sorts. This plan has been adopted in consequence of the failure of the Deodars and Limes on the north side of the vista." It is submitted that the result of the failing experiment might have been obtained at the cost of five or ten trees, as well as of hundreds or five hundreds. One other instance. Visitors to Richmond Park have been attracted of late years towards the bailiff's lodge by a group of fine Araucarias, raised there by his care and skilful culture. Much disappointment has been felt by finding that they had lately been uprooted, and much surprise and some incredulity expressed on a rumour that they had been removed to the gardens at Kew. The director, however, in his annual report, says:—"A very fine Araucaria, 20 feet high, has been transported from the bailiff's lodge in Richmond Park to the end of the Broad Walk, opposite the gates on Kew Green; and three others, as tall, from the same place, are planted in other parts of the grounds." It is notorious that the gardens of Kew received the *Araucaria imbricata* as early as did the Arboretum at Dropmore, if not at an earlier period.* Also, that with ordinary care and proper culture, the Royal Gardens might now be ornamented with Araucarias, 40 feet or more in height, such as the lover of trees resorts, on permission, to the Arboretum of Dropmore, Holker Hall, or Percy's Cross, to enjoy the contemplation of. It is doubtful whether the transplanted Araucarias, of 20 feet high, will be a permanent gain to Kew; it is certain that they are a loss to Richmond Park. On the economical results of adding to the director's duties those of the head of the Botanical Department under the Trustees of the British Museum, I would finally submit that—Not only in the way which suggested to Dr. Hooker the term "competing bodies," but in relation to the conservation of his acquisitions of dead plants for Kew by success in the competition, is the State made to pay twice over for the same National work. The botanical department of the British Museum consists, besides the herbarium, of a fire-proof museum open to the public, of a collection and models of fruits, of a collection of gums, resins, fibres, and other natural vegetable productions, of large specimens and sections of woods, and other parts, with microscopical preparations, exhibiting the form and structure of plants. Its chief and essential part consists of "the general herbarium," "the British herbarium" with various other smaller "herbaria of historical interest," also a departmental botanical library in addition to the advantage of the general library. The staff consists of the keeper at an annual salary of £500, of a senior assistant at £180, and of a junior assistant at £150. Their time is exclusively given to the duties for which they are paid. The Royal Gardens at Kew have now had annexed to them a herbarium and a museum, rivalling and analogous to those at the British Museum. The staff specially attached to this "annex," includes a keeper having a residence, with two "assistants," at collective annual salaries of £750. Besides a special curator of the museum and an assistant at £315 per annum. The keeper, Professor Oliver, is also Professor of Botany at University College; one of the assistants is also Lecturer on Botany at a London Medical School. Through this additional establishment for the same end as the botanical department of the British Museum, Dr. Hooker has been enabled to publish, or aid in the "publication of 130 volumes on botanical subjects, many of these being accounts of plants collected by Government expeditions" (detained at Kew) "monographs published by officers connected with the herbarium" (*i. e.*, the salaried officers holding elsewhere professorial chairs), "colonial floras," and works of that description. To the extent or proportion in which the director's time has been diverted from the immediate

* On this paragraph, Sir John Lubbock, in the Kew debate of August 8th, speaking in defence and by instruction of Dr. J. D. Hooker, led the House to believe that it misrepresented his client as being the planter and mis-manager of the first received *Araucaria imbricata*. "It should be borne in mind, however, said Sir John, "that the Araucarias referred to were planted in 1796, and that Dr. Hooker was not appointed director of Kew Gardens till 1865." (Hear, hear.) *Times* report, August 9th, 1872. The derisive cheers expressed the sentiment sought to be excited against Professor Owen by the Honorable Member. Of course the statement of the early opportunity given to Kew to exhibit to the public the noble character of such a "Chili Pine," as Mr. Mongredien has figured (see our number for Sept. 25th, p. 269) was made, not with reference to the individual, but as exemplifying the system—the devotion to dead plants to the neglect of the living. The first experiment with the *Araucaria* was one by which the successors of the Aitons ought to have profited. Had it been repeated in 1840 or 1850 with the same care and preparation as at Dropmore, the present director would not have been driven to avail himself of plants "20 feet high" in other public pleasure-grounds. Prior to the transfer of these Araucarias to Kew, the species was represented there by specimens, the largest of which may have given the editor of the *Athenaeum* and others the notion of the character of the *Araucaria imbricata*. It is significant evidence of the influence of the herbarium at Kew, and the work which there engrosses the attention of the director, that lovers of trees find no true or worthy example of the "Chili Pine," nearer London than Dropmore.

aims of the Royal gardens to this foundation of his scientific fame, the proportion of his salary of £800 per annum must also be placed to the credit of the superaddition of the dead plants to "the botanical department under the Board of Works," competing with the "botanical department under the Trustees of the British Museum." The only ground which after mature consideration occurs to me for the initiation of such an anomaly is the want of space, which for about twenty years has affected the reception and convenient arrangement of the indispensable additions, or of such as ought to have been made, to the National Herbarium at the British Museum. This requisite space will be provided in the New Museum of Natural History in course of erection at South Kensington; and the only objection to the transfer of the herbarium at Kew to the National Natural History Museum in London, will then have ceased to exist. A saving of £500 a year may be estimated to be so gained to the nation, and nothing would be lost to science; on the contrary the director would recover the time for the discharge of his physiological duties at Kew, and the keeper of botany at the British Museum would be better able to fulfil his nomenclative and descriptive functions in London. "Herbaria collected by Government expeditions for about forty years past," which are now hazardingly stored at Kew "in an old house, which is not fire-proof," would be accommodated in a fireproof building. Further, the State, instead of having to provide what Dr. Hooker demands, "a fireproof building," which signifies a costly museum "at Kew," would avail itself of the museum now in course of erection in London.

(Signed) RICHARD OWEN,

Superintendent of the Natural History Department,
British Museum.
May 16th, 1872.

THE PROPAGATOR.

THE ART OF GRAFTING.

(Continued from p. 291.)

ROOT GRAFTING.

MANY plants which are difficult of propagation may be multiplied by grafting a branch on a portion of root either their own or that of another plant; whence arise two subdivisions:

1. GRAFTING A PLANT ON ITS OWN ROOTS.—It is probable that woody species, for the grafting of which no allied species can be found, can be propagated by grafting their branches on their own roots. Dr. Loiseau, of Montmartre, who had begun some experiments on this subject, died before completing his investigations. We shall, however, mention some methods which have been admitted into practice.

ROOT-GRAFTING BY APPROACH.—In 1867, M. Grasideou, gardener to the Botanic Garden at Montpellier, more fortunate than his predecessors, succeeded in grafting a rare Mexican shrub—*Convolvulus macranthus* (*Ipomœa murucoides*), of which there was only a single specimen in the establishment. The branches not severed from the plant were grafted by approach on portions of the root during the flow of the sap; the portion of the root which was grafted was not quite severed from the parent-plant, and was planted in a small pot filled with soil. In a month the union of the parts was completed. A few weeks afterwards the portion of root was detached from the parent plant, and subsequently the branch grafted upon it was also gradually severed. These grafts have prospered and reproduced several specimens of the original plant.

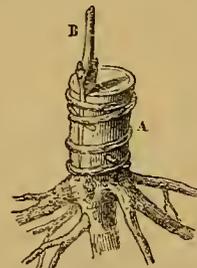
ROOT-GRAFTING BY VENERING.—A portion of root is prepared by making an incision with a notch at the top. The scion is similarly prepared by making a corresponding tongue at the upper part of the sloping cut. They are then placed together, so that the tongue of the scion will fit into the notch in the root, and bandaged without using mastic. The branching extremities of the root are cut away, and the graft is planted in a half-shady place in a sloping position in the trench, and covered with good soil up to the upper bud of the scion.

ROOT-GRAFTING BY THE ENGLISH METHOD.—In this case the diameter of the scion is larger than that of the root. The base of the scion is cleft, and the upper part of the root cut in a sloping direction on both sides. The cleft part of the scion is then placed on the top of the root, as in *saddle-grafting*. The graft is bandaged with wool, and planted in a shady place in a light compost. Should the root be a long one, it is better to

lay it in an inclined direction in the soil rather than to plant it upright, as growth is sooner promoted in the former position.

2. GRAFTING ON A SEPARATE ROOT.—In contra-distinction to the methods just enumerated, in which the stock is the root of the plant which is to be grafted, in the present mode the stock and scion are taken from different plants. The stock is either a portion of a root proper or a stem cut down close to the root, but not below the neck.

GRAFTING ON A FRAGMENT OF A ROOT.—The *Bignonia*, the *Tree Pæony*, and the *Wistaria* should be grafted in spring before the flow of the sap, or in August, when it has gone to rest. We have read that the Chinese graft these plants in October. The tubers or cuttings from the roots are taken before the sap begins to flow, and laid in a trench. As soon as the buds begin to swell, the time for grafting has arrived. The scions (B) are taken from the shoots of the previous year. They are cut with a thin wedge-like extremity, and inserted into the stock (A) either by cleft-grafting or inlaying. The graft is only slightly bandaged or not at all; mastic is not required. The subjects grafted are then potted and placed under glass, so as to have the air excluded. If it is apprehended that drops of condensed vapour may find their way into the cleft of the graft, the pots should be plunged in a sloping direction under the light or cloche. As soon as the scion has begun to shoot, air should be admitted by degrees. As the cut part of the scion is not entirely inserted in the cleft, and as the stock is completely buried below the level of

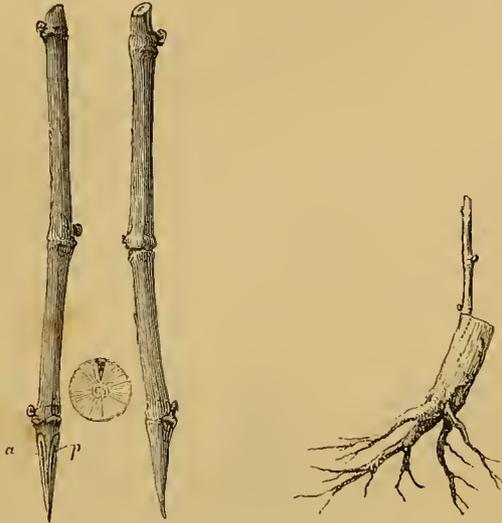


A fragment of a root grafted (*Bignonia*).

the soil, the graft will throw out fibres and thus come upon its own roots. Suckers may be prevented from rising by the removal of the upper part of the roots, which serve for stocks, and by destroying the latent buds.

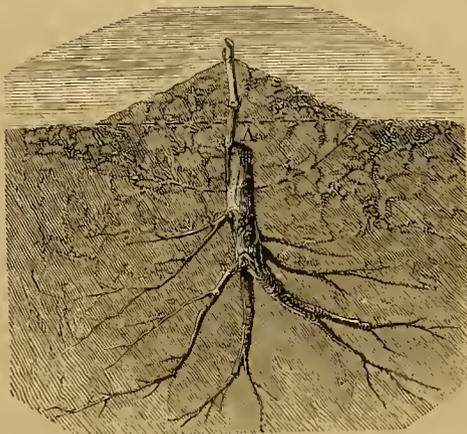
GRAFTING ON THE NECK OF A ROOT.—The *Clematis* is usually grafted under glass, on the neck or on a separate root, with herbaceous scions not stripped of their leaves, and cut from the parent plant just when the buds begin to swell. The stocks after grafting are potted, and placed under a cloche, with the air excluded. They remain there until new roots appear around the ball, and the buds of the scion begin to shoot. The *Hollyhock* succeeds in the open air grafted close to the ground. But this subject has the disadvantage of sending out above the graft too many exhausting branches. This may be in part remedied by inserting the scion in the shortened stem just above the neck, or by grafting on a secondary root. After grafting they are planted out in ordinary soil. The manner in which the *Hollyhock* grows intimates that it need not be grafted very early in the season; and as cold damp winters are injurious to the scion-branches, these should be detached from the parent plant before winter, and buried completely up to the moment of using them in grafting. The *Walnut* succeeds when grafted on a young plant close to the ground. The neck is laid bare and cleft-grafted; then the soil is heaped up around it as far as the uppermost bud of the scion. On account of the softness of the tissues of the *Walnut* tree, the scion is cut obliquely, and the stock is also cleft obliquely, as we have explained under the head of oblique cleft-grafting. If it is desired to avoid cutting the pith of the scion, the bark on two sides may be pared off, and the scion then inserted into the stock, which has been prepared to receive it by the process of inlaying. A scion of two years' growth will prove sufficiently hardy. The *Magnolia* is grafted by inlaying on the neck of the root in July or August. The subjects grafted are placed under a frame for a month, then re-

potted and removed to the north side of a wall or other shelter. The vine, of which we have already spoken under the head of cutting-grafting, can also be grafted by this method as well as in the English fashion, on the neck of the root before the sap begins to flow, either in February, in southern districts, or in March and April in later parts of the country. Cleft-grafting is most frequently employed in vineyards. The neck of the root is laid bare, and the stem cut off about 4 inches below the surface of the soil. The more scaly the stem is, the lower it should be cut, in order to reach a sound place for the graft. The scions are shoots with two or three eyes cut beforehand, well-ripened, and kept in the ground in shade. They are cut obliquely (*a, p*) and inserted into the stock with the aid of



Vine-grafting near the root.

the chisel or grafting-knife. If the stock is not cleft quite across there will be no necessity for bandaging. The application of grafting-wax to the cut is not absolutely necessary. The addition of a stake or prop, and the heaping up of the soil as far as the highest bud of the scion, complete the operation. When the operation is carried on in a vineyard on a large scale, a workman with a small mattock lays bare the soil at the base of the stems of



Vine-graft completed and earthed up.

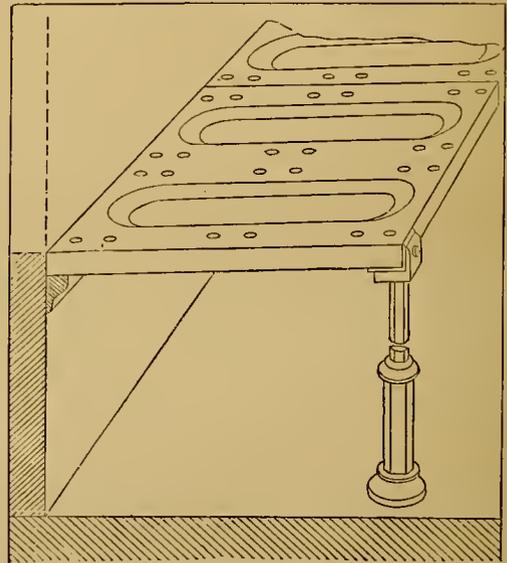
the vines which have been previously disbranched. The grafter then follows, freshens the cutting of the stock, and inserts the scions, of which he carries a supply already prepared in a basket of fresh moss. A third workman covers the graft with clay or onguent de St. Fiacre, fixes the prop, and heaps up vegetable mould over the graft. In the summer the disbudding of the shoots which issue from the stock and the tying up of the shoots from the graft must not be overlooked.—*C. Baltet.*

(To be continued.)

GARDEN STRUCTURES.

WATER-PANELLED PLANT STAGE.

AMONGST the exhibits at the late Birmingham show, this plant stage, which was shown by Mr. Ayres, was not the least interesting; and as many inquiries have been made of me respecting it, I shall be glad to furnish your readers with some description of it. The slabs of which it consists are formed of the finest hydraulic Portland cement, with as much clean gritty sand as will make a good concrete. They are not moulded, as might be expected, but upon a clean smooth polished cement table the small cast-iron cones, which form the perforations, are placed at regular distances apart, and around them the concrete is filled to the necessary thickness of the slab. When the concrete is sufficiently set, the T and angle iron, which gives strength and tension to the slabs, is pressed in, and at the same time the moulds to form the water panels. Thus the slabs are pressed, not moulded, as I have often been told they were, and are in consequence much stronger. Such is the *modus operandi* by which the slabs are formed, and it is very easy to see that by the introduction of T iron any amount of strength may be imparted to them. As usually constructed, 3 feet long by 2 feet wide, the breaking weight of each slab is upwards of 4 cwt., and hence



Water-panelled Plant Stage.



Vertical section.

they are much stronger than slate of similar size. The advantages of this kind of stage to gardeners are self-evident. To amateurs, however, I may remark, that at certain seasons a moist atmosphere is indispensable to cultural success. Hence upon these panels, when heat is applied to the pipes, the water warms and moisture is evolved proportionate to the temperature maintained, suitable either for Orchids, Ferns, or stove plants. By concentrating the heat beneath the staging you may if you please have a vapour bath, and during the dry winds of March or warm days of summer, when you want the air moistened and cooled before it passes among the plants, if the panels are filled, the air passing over them licks up the necessary moisture. Thus the continual sprinkling of our plant and forcing houses is obviated, and visitors, instead of playing at "hop, skip, and jump," to avoid puddles in the path, may walk along in comfort without wetting their feet. When either fruit or growth wants ripening, withdraw the water from the panels and a dry atmosphere is secured. I need hardly say these are advantages which can scarcely be over estimated and can only be secured by this system. A close and suffocating atmosphere is avoided and

a climate substituted such as nature provides only in the finest growing weather. In the tropics the atmosphere is not close, like that of an ordinary forcing house; on the contrary, it is constantly in motion, and this is an advantage secured by Mr. Ayres's system, by which we may command the necessary amount of moisture without a stagnant atmosphere. All attempts in this direction previously made have failed simply because the supply of moisture has never been continuous and natural, owing to the house having to be closed to secure its action upon the plants.

The accompanying illustration shows the slabs in position, supported at certain distances apart by light cast-iron columns tied to the front standards by T iron bearers carrying angle iron back and front, upon which the slabs rest. The smaller figure gives a cross section of one of the slabs, showing the perforations for the passage of warmed air, and the panel for the reception of water. In cases or at seasons when it may not be necessary to use moisture, the panels may be filled with cleanly-washed Derbyshire spar, pea gravel, or cockle shells, the water being readily permitted to meander through the panels. Where the panels may not be desired, the slabs can be supplied without them.

G. WESTLAND, *Witley Court.*

THE FRUIT GARDEN.

PINES AND VINES TOGETHER.

THERE are many old garden structures in which these two fruits are grown together, and sometimes with tolerable success; but to do them justice, they require separate houses. I disagree with the practice of growing Grapes over Pines, more especially late Grapes, for Pines not only dislike the shade, but when the Grapes and wood of the vines are ripening, they would be seriously injured by keeping up that close humid atmosphere which is so necessary for the Pine-apple. When grown together, it is difficult and tedious to get at the vines for the purpose of pruning, training, or of thinning the branches. Every experienced cultivator is aware that these objections exist. I can safely affirm, however, notwithstanding these evident drawbacks, that good Pine-apples may be grown under this system. A proper command of heat is indispensable, and where bottom-heat is supplied by means of hot-water pipes in a chamber or tank, independent of fermenting materials, little danger may be feared of failures, as the desired heat can easily be applied and regulated to a degree. Besides, a vast amount of labour is saved in preparing Pine beds where bottom-heat is supplied by a well-regulated system of hot water.

The bed in which my fruiting Pines are grown is 17 feet long and 5 feet wide, in a lean-to pit. The plunging material employed is tanner's bark. It will thus be seen that Pines are grown here under conditions exceptionally inexpensive and simple; that is, I am dependent on fermenting material for bottom-heat, and a flow and a return pipe running along the front only, to keep up the desired temperature. This structure is, however, inefficiently heated, as I can only command 60° Fahr. in severe weather. The pots which I use and prefer for my fruiting plants are of the sizes called 10-inch and 11-inch, and which I consider sufficiently large for all practical purposes. Pine plants will show fruit sooner in small pots than in large ones, and under proper management will swell off their fruit equally well. My fruiting Pine pit contains only eighteen plants, because in Pine-growing I allow plenty of room between the plants for a free circulation of air; nothing is gained by crowding them but poor, puny Pine-apples, which at best are unworthy of notice. My suckers and successional Pine plants are grown in an old drippy, dilapidated vinery, underneath the shade of Grapes and vine leaves, a practice, as I said before, which I decidedly object to. It should always be remembered that, where there is much drip, the leaves get spotted, and sometimes the fruit is deformed. In my small fruiting pit, of an area of 85 superficial feet, or a little over 9 square yards, I cut last year (1871) fifteen Pine-apples, which weighed in the aggregate 61 lbs. 10 oz. My heaviest fruits weighed respectively as follows: 1 Queen weighed 5 lbs., 1 Montserrat 5 lbs., 1 Enville 5 lbs. 5 oz., 1 smooth-leaved Cayenne 5 lbs. 5½ oz., averaging more than 4 lbs. each fruit. The flavour of the fruit was pronounced by my worthy employer to be unsurpassable. The varieties we prefer here are the Montserrat and the Smooth Cayenne, which are considered of equal merit. I grow only a few Queens, as they are little thought of here compared with the black varieties. The Queen is unquestionably the freest to grow, the most easily excited to throw up, and will ripen

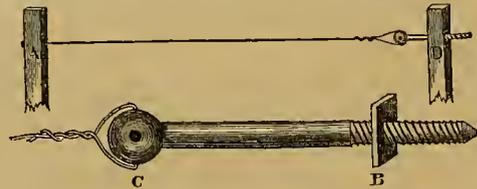
its fruit in less time than any other variety; in short it is the best suited to all seasons and purposes, on account of these qualities. But the Montserrat and the Smooth Cayenne are incomparably superior in flavour, an opinion, I think, pretty generally endorsed. The Queen sometimes cracks in summer, which deteriorates its flavour, and in winter its greatest fault is that of being too dry. But it may be fruited in ten months less time than the Montserrat, which requires longer time to bring it to maturity. My experience is, that the Queen takes four months in summer to perfect its fruit from the time of showing; but the Montserrat requires five months, and in winter and spring often six months to perfect its fruit. The Montserrat not only requires a longer time to attain its full growth, but also requires a much greater degree of heat than the Queen. I consider it an error to hurry the ripening process, for when such is the case it invariably happens that the fruit is neither so solid, sugary, nor so high-flavoured; therefore, in my opinion, the more slowly and gradually the development of the fruit proceeds, the larger and finer it will be.

To return now to the vinery. In the vinery which contains my suckers and successional Pine plants, I cut last year (1871) 160 bunches of good Grapes. The heaviest bunch of Muscat of Alexandria exceeded 3½ lbs., and one bunch of Black Hamburg was within a fraction of 3 lbs. in weight. It is probable that the aggregate weight of the whole produce of Grapes would be, allowing each bunch to average 1½ lb., about 240 lbs. weight. Thus the united weights of the Pines and the Grapes would be 301 lbs. 10 oz. The Grapes were well coloured and good flavoured. I cut the last bunches of Muscat and Black Hamburg in January, and the last bunch of Black Alicante, sound and plump, with a fine bloom, on the first day of March. The vines are kept inside during the winter, as they cannot be turned out, and of course under a low temperature, say 40° to 45°, to suit their requirements when at rest. Thus the suckers and successional Pine plants are necessarily subjected to an extremely cold temperature, which is injurious to them, as they ought to have in winter 60° to maintain them in robust health. Doubtless the Pine is capable of enduring a temperature such as few other tender plants could exist in; but extremes are injurious to all plants in a greater or less degree. It is preposterous to expect ill-treated Pine plants to develop that high degree of excellence usually visible in plants whose vigour has sustained no check at any time. Although the Pine seems to have hard leathery leaves that will stand any kind of ill-treatment with impunity, it is not in reality very hardy, for under injudicious treatment many perish, and others become of a sickly hue; but such is its vitality, that a few weeks of fair, generous treatment will suffice to effect a marvellous change in its appearance, and the plants flourish again, though undoubtedly with diminished vigour. This proves what I said before, that Pines and vines cannot be grown together satisfactorily.

WILSON BROADMAN.

A NEW RAIDISSEUR.

MANY persons who use the raidisseurs hitherto employed, have complained of one disadvantage which they possess, namely, that it is sometimes impossible to tighten the wires properly with them.



The raidisseur has been turned up to a certain point, and the wire is still rather loose, but another turn of the raidisseur will break it, and to avoid this the wire is allowed to remain in a slack condition, which is very unfavourable to effective training, and moreover has a very slovenly appearance. We are much pleased to notice an improvement, in which this defect is entirely removed, and which possesses the additional advantages of simplicity, durability, and cheapness. The new implement (of which we give an illustration) is known as the Raidisseur Fandrin, and very much resembles a round-headed bed-screw with a nut or bolt on the screw. A glance at the figure will show how it is used. One end of the wire having been made fast to the upright (as at A), and the other end secured to the head of the raidisseur (as shown at C), the nut B is then screwed off, and the screw end having been passed through the upright (as at D), the nut is again screwed on and tightened with a pair of pincers or a belt-wrench, until the wire is brought to a proper degree of tension. It will be seen at once that the screw allows of great nicety of adjustment, without involving too much straining or any slackening of the wire. The simplicity of its construction, which

precludes any possibility of its getting out of order, the neatness of its appearance, and the thoroughly efficient and satisfactory manner in which it answers its purpose, place this raidisseur far in advance of any other previously invented, and we have no doubt that it will supersede the kinds now in general use. Its cost too is trifling, and does not amount to more than 1s. 6d. per dozen.

FRUIT IN THE PORT OF LONDON.

Cox's QUAY is just now in a confusing state of bustle. Anyone having no business there would do well to stop away, unless he is particularly anxious to be bowled over by a porter bearing on his head and shoulders a hundredweight and a half. Or, by way of change, possibly a heavy cask rolling down an inclined plank bonnds across the roadway and cuts from under him the sauntering legs of the idler. Many people may be ignorant of the whereabouts of Cox's Quay; but from this day forth they need be so no longer. Let the would-be explorer descend Fish Street Hill, hard by the Monument; let him make a perilous dive across Lower Thames Street, beneath the tailboards of gibbing waggons—and there he is. And what does all the commotion arise from? Why, just this: the foreign fruit season has commenced, and three or four handsome screw-steamers are rapidly disgorging the dainties from their holds. The ships have all very much the same freight, and as the Pizarro is the handiest to reach, I jump aboard. Her cargo consists of Muscatel Raisins and Jordan Almonds from Malaga, of the finest quality, and Figs, Raisins, and Almonds from Valencia. Of green fruits, she has Grapes and Lemons from Lisbon, and Melons shipped at Gion. Hard by the hatchway is stationed the stevedore, who has contracted to unload the ship at so much per ton, say ninepence, and by him, checking every bale or case that is brought to deck, is a Custom House officer. Down in the hold the stevedore's gang are hard at work "breaking bulk," and hooking the packages to the tackle falls. What a Tom Tiddler's ground of saccharine matter they heedlessly trample on. Figs that have burst from plethoric tapnots, and Raisins that have leaked from smashed cases, lie scattered about in rich profusion. The bustle and apparent disorder is indescribable. There is an organised body known as fellowship porters, who, for generations, have had conceded to them by the Corporation of the City certain conservative privileges. Their number is restricted, and applicants to fill a vacancy must have gone through a course of probationary labour under the eyes of the warden. I am inclined to think though, it would be useless for anyone to apply for admission to this Herculean corps who could not trip lightly under a couple of hundredweight. In fact, the candidate should be able to climb with this load up five stories of steep ladders to the topmost floor of a warehouse. The members of the fraternity are mostly freemen, and are chiefly remarkable for their cropped heads, bull necks, and an inordinate development of white-stockinged calf. They are sullen in demeanour, and appear usually to be labouring under some heavy care. This, perhaps, is not to be wondered at, considering the weight they carry. Never, if it can be avoided, get into their way; or, if you are unlucky enough to do so, get out of it immediately, for their fellowship does not extend beyond their organisation, and they will sweep you aside with the gentle force of an elephant. It is the privilege of this corporate body to have the landing of all green fruits, such as Pine-apples, Melons, Grapes, Oranges, Shadocks, Lemons, Apples, and Pears, and each man gets twopence a turn between the ship and the warehouse. Be it understood he must take the heavy packages with the light, and he must equally carry his burthen to the ground floor or the top story. At low water he has a greasy, slimy ladder to ascend from the deck to the wharf, and as the tide ebbs his earnings become diminished with the sinking of the steamer, for he has so much further to climb. Still, these men earn more in the season, which lasts from the end of August till the following June, than can many a hard-working, hard-thinking educated gentleman. I am told they can make, at times, as much as 15s. or 20s. a day, and hardly ever less than 10s. The dry fruits are landed by ordinary labourers, who are paid at the rate of 5d. an hour, and this portion of the cargo is warehoused by the wharfingers, Messrs. Knill & Co., until the consignees dispose of it by auction or otherwise. Entering the store-rooms, I become conscious that I am walking on something that has much of the appearance and consistency of asphalt exposed to the influence of a burning sun. The soles of my shoes are buried at every step, and I am not without misgivings of leaving one or the other of my "Molières" behind me. This deposit, which has formed on the original flooring, is an incrustation of mud, composed of Prunes, Currants, Raisins, and Figs. When it reaches an inch or two in thickness, it is scraped into heaps and carted away. I wonder what becomes of it. Is there any mysterious process for extracting its juices, and utilising them in the flavouring of "lumps of delight" and such like candies? As I

pass from floor to floor I am led through narrow labyrinths of countless cases of Raisins, bags of Sultanas, tapnots of Figs, barrels of Currants, and packages of Almonds. And yet the storage men find their way through the fruity maze, and lay their hands readily on the different shipments, though there may be a hundred or more consignments from one steamer, built into lots. The green fruits, which it is the especial privilege of the fellowship porters to carry, goes to the warehouses of fruit brokers and auctioneers, in whose hands merchants place the shipments to be disposed of. The sales take place three times a week, on Mondays, Wednesdays, and Fridays, excepting a Jewish holiday or fast occurs on either of those days. Then a change is made to suit the most considerable of the buyers. The fruit-brokers sell the dried fruits equally with the green, though the latter is especially stored by them. On the morning of a sale samples of the shipments to be offered are laid out in what may be termed the tasting-room, and then clusters of luscious Grapes, Jordan Almonds, Muscatel Raisins, Turkey Figs, Persian Dates, Melons, Pines, &c., disappear from their divisions as if by enchantment. There is a brief struggle, a few rapid gulps, and a clean sweep is made of sufficient fruit to stock a window in the Central Avenue of Covent Garden. Then comes the auction, which is held in a tolerably large apartment, not unlike a lecture-room. The tribune of the broker occupies the centre of one side, and to his right and left the most considerable dealers take their places. In front, the mobocracy of the trade, costermongers and small fruiterers, find seats on a half-dozen rows of raised benches. Of course when any particular kind of fruit is scarce, the plebeians are debarred from laying out their limited capital, but when there is a glut they bid and make their purchases with their betters. Indeed, I was assured by a responsible person connected with the firm I visited, that if it were not for the costermongers speculating their shillings, the supply would frequently be greater than the demand. He told me it was quite a mistake to imagine that this class dealt in damaged or rotten fruit. Nothing of the kind. They bought when prices ran low, and from having no shop rent, could afford to sell cheap. In another month, when Oranges begin to come in, the trade will have reached its height. Then Cox's Quay will become completely blocked, and the adventurous explorer of that region will have to risk the almost moral certainty of being run into by a fellowship porter, bearing his hundredweight and a half of foreign fruit.—*Globe*.

FRUIT TREES FOR A SMALL ORCHARD.

I AM desirous of planting a small orchard—say 2 acres—with Apple, Pear, and perhaps a few Plum trees. The soil is sandy loam, with a substratum of sand. The aspect is open to north and north-east, and somewhat confined on the other sides. (1) What sorts of each kinds of fruits do you recommend? (2) When and how should they be planted?

HERBERT HOTSUR BULLOCK, *Petersfield*.

[For an orchard of 2 acres we would recommend (1) Apples, twenty sorts:—White Juneating, Irish Peach, Early Harvest, *Lord Suffield, *Stirling Castle, *Cox's Orange Pippin, Cellini, *Rosemary Russet, *Blenheim Orange, *Dumelow's Seedling, *Mere de Ménage, *Waltham Abbey Seedling, *Scarlet Nonpareil, Herefordshire Pearmain, Braddick's Nonpareil, Cockle Pippin, *Alfriston, Beauty of Kent, *Court Pendu Plat, *Yorkshire Greening. Those marked * should be planted in the proportion of three to one of the others. Pears, twenty sorts:—Doyenné d'Ete, Williams' Bon Chretien, Louise Bonne of Jersey, Beurré Bosc, Marie Louise, Glou Moreceau, Fondante d'Automne, Marechal de la Cour, Beurré d'Arenberg, Beurré d'Amanlis, Seckle, Beurré Diel, Suffolk Thorn, Madame Trévy, Beurré Superfin, Berré Rance, Josephine de Malines, Easter Beurré, Catillac. Plums, ten sorts:—Rivers' Early Prolific, Denyer's Victoria, July Green Gage, Green Gage, Prince of Wales, Prince Englebert, Jefferson, Coc's Golden Drop, Reine Claude de Bavay, Autumn Compote, Belle de Septembre. (2) Plant the trees about 10 feet apart each way, in lines, which will allow of intermediate cropping until the trees occupy the space, or you may fill the ground at once by planting at 6 feet apart. The sooner they are planted after the fall of the leaf the better. Dwarf pyramid trees are much to be preferred to the old-fashioned tall standards; select about two year worked plants, which are branched from the ground upwards.]

Cordon Apple Trees.—It may perhaps be interesting to know that my cordon trees have saved me from that scarcity of table Apples which has been so general throughout the country this season. One was gathered recently, weighing 1 lb. 6 oz., and measuring 14½ inches in circumference; it is called, I believe, Belle Dubois, and the cordon was trained on the lower plinth of the balustrade in our forecourt, the aspect is good but not exceptionally favourable. The main quantity of my Apples this year has been grown on cordons occupying spaces on the walls which, but for the cordon system, would have been perfectly bare.—P. NORTHALL LAUREN, *Pace Hill Park, Hayward's Heath*.

GARDENING ROUND LONDON.

(DURING THE PRESENT WEEK.)

BY OUR SPECIAL REPORTER.

PRIVATE GARDENS.

The Flower Garden.—The late frosts have considerably deteriorated the beauty of our flower gardens. Dahlias, Heliotropes, Perillas, Colenses, Alternantheras, variegated Maize, and other plants have more or less suffered, and, indeed, in open situations have been wholly destroyed. All ornamental plants that have been used in the sub-tropical garden and that are required for keeping through the winter, either for next year's work or for the increase of stock in spring, are now lifted and carefully housed. Cannas, in many cases, are allowed to remain out all winter; but thus treated the beds are covered over with a layer of half-decayed leaves. Such as are lifted are not got up until the end of October, unless they become too unsightly. About that time, however, they should be cut over, and the roots lifted carefully and stored away like those of Dahlias. Palms, Datras, Cycads, India-rubber plants, Pomegranates, the finer kinds of Yuccas, Monstera, Sansevieras, Ferns, both tree and dwarf, &c., plunged out of doors in pots are now taken up, and any roots that may be pushing over the surface of the pots or through the holes at the bottom are removed, the pots washed, and the plants stored closely in their winter quarters. Large specimens of Musas are generally planted out, but the smaller-sized and more manageable ones are merely plunged in their pots. Those planted out are lifted with small balls attached to them, and have their leaves tied pretty closely together; the plants are then laid on their sides on a shelf, where they remain till spring, when they are potted and started into growth. Lantanas are lifted from the flower beds, cut back to the old wood, potted into comparatively small pots, and placed in a temperature of 45°. They break freely in spring, and yield plenty of cuttings. Erythras that were plunged in pots are lifted and housed, but those that were planted out are still left in the ground, where they are yet fresh-looking and ornamental. When they shall have become unsightly, their stems will be cut over, and the roots taken up and wintered like those of Dahlias or Cannas. Wigandias, Castor-oil plants, Polymnias, Solanums, and other plants that are easily increased from seed are allowed to remain out of doors as long as they are fresh-looking, but as soon as their beauty is impaired by frost they are cleared off. The *Amarantus salicifolius*, so beautiful all throughout the summer, was destroyed by the first morning's frost. Fuchsias have done remarkably well this summer; some of the golden-leaved ones, Meteor, the points of the shoots of which are crimson, and a few other dwarf and free-flowering kinds have been used as edgings and groundwork in beds for larger plants. Taller ones have been effectively employed for centres to beds, and for massing in quantity. Rose of Castile is the best of all for this purpose. Although many of the Fuchsias have been lifted, those that still remain are yet very beautiful, and quite uninjured by the late frost. The variegated *Mesembryanthemum cordifolium*, variegated Lemon-scented Thyme, Centaureas, Cinerarias, *Eleocharis secunda*, *Semprevivum*, *Chrysanthemum Sensation* (the beautifully yellow variegated-leaved one), *C. frutescens*, many kinds of Geraniums, especially the Anemone-leaved one, Gazanias, crimson-leaved Beet, and many other plants used in summer bedding have as yet withstood the ill effects of the cold, and appear as healthy and flourishing as they did a month ago. Amongst hardy plants the most conspicuous is *Pyrethrum serotinum*, double-flowered Feverfew that was cut back early, Delphiniums treated in a similar manner, *Nepeta Mussini* cut over in June, Asters in variety, *Antirrhinum*s, the shoots of which have been kept well cut in, Pansies and bedding Violas, the produce of summer cuttings, and old plants cut over in June or July, *Plumbago Larpenata*, and others. The Laurstinns, *Arbutus Unedo*, and a few other shrubs keep on shrubberies gay with flowers, and Cotoneasters, Hollies, *Skimmias*, *Pernettyas*, *Cratogeomys*, *Berberises*, &c., with berries, while *Colchicums*, autumn Crocuses, and *Sternbergia lutea*, are now beautifully in bloom, and help to keep our borders gay. Jonquils, spring Crocuses, Tulips, Hyacinths, and Narcissus, for outdoor spring decoration, are being planted in borders. As soon as flower beds are empty they will be manured, if necessary, dug over, and planted with spring-blooming plants, amongst which bulbs are inserted.

Conservatories.—These as a rule are less attractive from this time till Christmas than during any other season of the year. Climbers are being gradually cleared of their over-growth, both for their own good and also for the benefit of the plants underneath them. Fuchsias on trellises are cut in closely, only a few straggling shoots being left; those in pots the blooming season of which is past are gradually dried off and laid on their sides under stages where

they can be hidden from sight. Spring-struck Fuchsias and also late started old plants keep up the supply at this season. Persian Cyclamens are now coming nicely into bloom, and are taken into the conservatory as their flowers expand. Before they come into bloom they are syringed every fine day and allowed plenty of air. Some contend that thoroughly decayed cow-dung mixed liberally with a good fibrous loam is the best soil for Cyclamens, whilst others again use no cow-dung, on account of its tendency to harbour worms. *Erica gracilis* is now in excellent bloom. Specimens of Heaths are housed in the most airy parts of conservatories or greenhouses, and the smaller ones are put into frames. Other hard-wooded greenhouse plants that have been out of doors all the summer are also housed. Tree Carnations coming into bloom are being staked; succession plants are kept in close frames, and such as require it are being repotted. *Chrysanthemums* are being neatly staked and tied, the pots washed, the surface soil removed and replaced by a little fresh material, and the plants taken indoors for blooming. *Chrysanthemum frutescens*, both indoors and in the flower garden, is now in fine condition. Plants of *Sericographis Ghiesbreghtiana* are placed in an intermediate temperature, to induce them to bloom, while others are kept cool. Plants of *Erythrina crista-galli* that bloomed early and that are now completely withered are cut over and set on shelves or under shades. Pots of *Lilium speciosum* are laid on their sides under stages and in sheds out of the reach of frost, the decaying stems being cut down to within 8 or 10 inches of the surface. Zonal Pelargoniums that were lifted from the open ground in August and since then been kept under favourable circumstances are now coming nicely into bloom. Cape Pelargoniums have been potted; some have broken well, but the majority are kept in check. No more water is given to them than is absolutely necessary. Violets are being lifted and planted in frames or potted; for some time after they are set in their new quarters they are kept well shaded. Succession batches of Tulips, Hyacinths, Narcissi, &c., are potted, placed out of doors, and covered over with ashes. *Rhododendrons*, *Kalmias*, *Azalea amœna*, and a few other shrubs commonly used for forcing, are being potted and placed in intermediate houses for early flowering. When cut blooms only are required, these, together with Lilacs, Ghent Azaleas, &c., are just lifted from the open ground, placed in a warm house, and have their roots covered over with a little light soil, and syringed two or three times a day, to cause them to break freely and to produce flowers, after which, unless especially required, they are thrown away.

Stoves.—Paint, where used as a shading for stoves, is now being washed off, in order to secure as much light as possible. Poinsettias are plunged in a gentle root temperature near the glass. *Gloxinias*, *Achimenes*, and *Caladiums* are stored away on their sides, when they can be kept dry and not cooler than 45°. The supply of water for *Allamandas* is being lessened; indeed, all plants except those in active growth are now kept on the side of dryness. *Begonias*, such as *spathulata*, *Saundersii*, *Weltoniensis*, and a few others, are now very ornamental, as are also some of the fine-leaved kinds. *Crotons*, *Dracœnas*, variegated Pine-apples, and similar plants, form the principal attractions of the stove at present. The supply of water for Orchids is now diminished; *Odontoglossum Bictoniense* and *grande* are at present very fine.

Indoor Fruit Department.—Beds for Pines are being renewed where fermenting material is used, and the plants replunged, keeping them a little further apart than they formerly were. If the heat of the beds be too great, the pots, instead of being plunged, are simply set on the surface until the temperature decreases. Some are being planted out for fruiting, at distances further apart than they have hitherto been. Fresh linings are also being applied. The second crop of Figs has been gathered; the aim now, therefore, is to have thoroughly ripened wood before winter sets in. Pot-plants that have borne fruit, and that have been for some time turned out of doors, are partly taken into houses, where they receive plenty of air; part of them, however, still remains outside. Some, having fruit yet unripe, are placed in the Pine pits, in order to accelerate its ripening. To the latest vineries a little fire-heat is given, also plenty of air. The earliest forced vines are in some cases being pruned. Peaches and Nectarines in pots are still outside, but in some cases a few have been housed. Wall trees are divested of their leaves by having a broom drawn lightly along in the direction in which the shoots grow.

Forcing Department.—A moist temperature is maintained in Mushroom pits by sprinkling the paths and walls with water from a finely-bored syringe. Cucumbers for winter use have just come up, they are being potted singly, and are placed near the glass. One set of plants is showing fruit for the first time, and those planted before them have been in good bearing for a month or so past. French Beans are being sown, earthed up, and watered as required; a position is given to them as near the glass as possible. They are also

frequently syringed to keep down red spider. Chicory roots are taken up and planted thickly in pots or boxes, which are commonly placed in the Mushroom house. Lettuces are being placed in frames for winter use. Frames are also being prepared for the reception of some seeds of the white and green Paris Cos and Neapolitan Cabbage Lettuces to be planted out in early spring. Mustard and Cress are sown in pits and frames, in quantities according to the demand.

Hardy Fruit and Kitchen Garden.—Late Pears and Apples are being harvested as soon as they are fit. Raspberry bushes are being pruned, and new plantations made. Strawberry plantations yet continue to be made; some are being pricked off into the reserve ground for transplanting in spring. Celery and Cardoons are earthed up as required, a dry day being chosen for the operation. To advancing Cabbage crops a little earth is drawn with the hoe. Endive is being tied up to blanch as it becomes ready, sometimes a supply is lifted from the open border and transplanted with balls in frames. When they are ready for blanching, the frames are closely shaded. Cauliflower plants in open borders are lifted and transplanted in frames, so that they may be easily protected in winter. Cabbages for spring use are being planted out as space and time permit. Lettuces from early autumn sowings are being transplanted to warm borders. All Tomatoes are gathered, and those that are not quite ripe are arranged along the inside front of glass houses, close to the glass, where they soon ripen.

NURSERIES.

Indoor Department.—Newly-imported *Darlingtonias* are being divested of any decaying substances, repotted into a mixture of peat, chopped sphagnum, and finely broken crocks. The pots are comparatively small, and the plants are kept in a cool north house for some time. Plants of *Dracenas* becoming "leggy" are cut down, the tops being used for cuttings, and the stems cut into small pieces, each having one or two eyes. These eyes are inserted in pots or pans of sandy peat, about one-third of an inch below the surface. The pots are then placed in frames inside the propagating pit. *Crotons* are also being propagated by means of cuttings. Palms from the seed-pans are being potted off singly, and placed for a time in a close frame in a warm pit, where they soon begin to emit fresh roots. *Begonias* continue to be propagated by means of leaves, and seedling hybrids to be potted on as they require it. The gills, *i. e.*, the little shoots at the base of the fruit, of variegated Pine-apples are twisted off, and inserted in tan beds until they form roots, when they are potted. Variegated *Gardenias* are being grafted on the common kinds. *Camellias* newly imported from the Continent are being potted, and set on front shelves. They lose a good many of their flower-buds, but nurserymen nevertheless find it to be cheaper to obtain the commoner kinds from continental growers, than to raise them themselves. *Polygalas* and some other greenhouse plants are also imported in the same way. Tree *Carnations* in frames are encouraged to make growth. *Cyclamens* are shifted if necessary, but the bulk of them has been repotted a month ago. They are kept in light airy frames, and houses near the glass, syringed frequently, and some, in order to have large specimens, give a little fire-heat, and at the same time, abundance of air. *Pelargoniums* of all classes are placed in frames or pits. Those newly potted up from the open ground are denuded of a great portion of their leaves and kept close for a time. Cuttings of all kinds of *Geraniums*, that have been struck in open borders, are potted or placed in boxes and kept near the light in frames. Heaths are mostly all brought under cover; the specimens being placed in houses, and the young plants in frames; abundance of air is always given.

Outdoor Department.—*Magnolias* are being layered; the shoots are cut up a little under an eye, about a foot or so from the ends, according to their strength; the partially-severed joint is then given a slight twist and is inserted about 3 inches or 4 inches in the soil, placing in immediate contact with it a handful of prepared soil consisting of loam and peat. The layers are allowed to remain thus for two years, by the end of which time they will have become good plants and well rooted. *Rhododendrons*, *Azaleas*, *Garrya elliptica*, and *Aucubas* are similarly treated. Hardy *Ivies* are being struck from cuttings in wall borders. The variegated kinds are also struck in the same manner, and in some cases in frames, closely shaded for a time. Established plants of all the finer kinds in pots are staked and placed in sheltered positions, either in open frames or at the foot of walls. Plants of *Berberis stenophylla* are raised from seeds in cold frames. *Euonymus radicans* is being increased by means of good-sized cuttings, either in frames or out of doors. Plants of this established in pots are cleaned and set in frames, where they can be protected from severe frost in winter. Rose cuttings under handlights are kept well shaded. Pansies and other bedding *Violas* are lifted and transplanted, with a dibber, into lines, about 5 inches apart, leaving the plants 4 inches asunder in the

rows. Daisies are also divided and transplanted in the same way, but not so far apart. Plants of choice French *Marigolds* are protected by means of handlights and sashes, so that they may ripen their seeds.

MARKET GARDENS.

Most of the spring Cabbages have been planted; the principal work, therefore, now consists in manuring the ground and in digging all empty spaces for another planting of Cabbages and Lettuces. Cauliflower plants are now pretty strong. Hoops are placed over the beds, on which mats are laid to protect them from frost. Frames are being prepared in which to prick out the Cauliflower plants for the winter. In these the soil is placed to within 8 or 9 inches of the surface. As the soil in such frames consists only of common garden mould, it does not sink so much as that employed by private gardeners, which is commonly some prepared light sandy compost. The spaces between the lines of young *Rhubarb* plantations are dug over and planted with Lettuces. Lettuces from between the rows of Endive are being removed for market, and the Endive tied up for blanching as it gets large enough. Ground lately occupied by seed Onions is being dug over for the reception of Lettuces. Beds of young Onions are being weeded. Tomato plants have been destroyed by frost, but all unripe fruit has been gathered and placed on a layer of clean straw or grass in frames near the glass, where they soon ripen. Fruit of Vegetable Marrows are also placed in frames in the same way, to ripen properly for producing seed. Mushroom beds are still being made. When in course of erection, mats are placed over them during the night, to prevent too great an evaporation and decrease of temperature. They are spawned as they become ready.

A Garden on the House-top.—A few years ago a writer in *Once a Week* suggested that when the Smoke Consuming Act came into force every Londoner should rejoice in a garden; the site for his floral display was to be on his own roof. We have not attained to that purity of atmosphere so hopefully anticipated by this sanguine writer, yet a garden on the house-top may be seen any day in London by those curious in such matters. We hear a great deal of the dirty, unthrifty habits of the labouring classes in our huge city, but we must also acknowledge there are many among them who strive for better things, and the garden on the house-top is an instance of this. In one of the most crowded parts of London there stands a large model lodging house, built with great regard to use and comfort no doubt, but with very little regard to ornament; it forms three sides of a quadrangle, and, as is usual, a stone passage with its iron railings runs in front of each story up to the very top, where the iron railing is replaced by a broad stone balustrade. On the top of this balustrade is a garden, and a flourishing one to all appearance, and this is how I happened to see it. I was visiting a friend in Bloomsbury-street, and on going into one of the top rooms at the back of the house I was astonished to see across the open space in front of me a garden—a veritable garden, in which were growing not only plants commonly grown in gardens, but also Sunflowers, and even Maize.—*Queen.*

Greenwich Park.—Last week a large and influential deputation waited upon Mr. Goschen, the First Lord of the Admiralty, at Whitehall, to convey to him the sentiments of the people of Greenwich in protest against the proposal of the Admiralty to build upon what is regarded as a portion of Greenwich Park. Sir David Salomons, M.P., introduced the deputation, and Mr. Barnett, one of the Churchwardens, laid before Mr. Goschen a complete history of the subject upon which the gentlemen had come to address him. This statement showed that there had been a long-standing dispute between the Admiralty and the people of Greenwich respecting a piece of ground adjoining the Park and called Park-lodge-gardens, which, it is alleged, came into the hands of the Admiralty only for the use of the inmates of the Hospital, and, when no longer required for the Hospital, should recur to its former use as part of the Park, in place of being "let on building leases," as a board on it now showed to be the desire of the Admiralty. Mr. Barnett said the people of Greenwich were quite taken by surprise in this matter, for in former communications with the Admiralty they had been informed that the ground should not be built upon. Lord Henry Lennox, in 1867, stated that "all intention of building upon this plot of ground had been abandoned by my Lords," and this was confirmed by a later letter, saying that the "existing arrangements" would not be disturbed. The deputation considered that to build upon this land would be a public wrong, for nothing was paid for it, and it should be returned to the Park. Mr. Goschen acknowledged that the subject had been put very forcibly, and he assured those before him that the whole of the matter should receive the earnest attention of the Lords of the Admiralty. The deputation, through Sir David Salomons, thanked the right hon. gentleman, with whom was Mr. Shaw Lefevre, and retired.

THE GARDEN.

“This is an art

Which does mend nature: change it rather: but
THE ART ITSELF IS NATURE.”—*Shakespeare.*

BEDDING OUT.

A DEFENCE AND A REPLY.

(Continued from p. 288.)

THE last article on this subject pointed out a few of the many important branches of ornamental gardening which have to be weighed in the balance against bedding out. I now follow with a continuation of Mr. Peach's paper, commenting on such portions of it as demand a reply.

What I think has tended to give some persons a distaste to bedding-out is that many people who have not proper appliances and means to boot adopt the system, and make the interest of their garden entirely depend on the summer hedding, when, at the best, it is only a makeshift with them. I will not speak now of spring or winter hedding-out, the first of which I can highly recommend to those who have the proper means and amount of space to give over to it, and which, to a certain extent, can always be made to work well with summer bedding-out, even where the whole garden is not devoted to it. With regard to the latter, it has never yet given me the least pleasure when I have seen it. Winter is such a dreary time in a garden—with snow and frost, damp grass and wet walks, and dull and dark weather—that it is hardly worth while to fill beds with evergreens or coloured Kales, and make patterns, as some do, with broken spar, and brick, and gravel, and ashes, and all that kind of—well, to use a strong word—rubbish. There is no growth to watch, no changes to take place, no interest to keep up. When once you have seen a winter garden there is no variation, unless it may be a little more or less snow, or a little more or less slush; so that I think one fault which is found with the bedding-out system—that the beds are empty during the winter—is comparatively a trifling one, because, if the form or plan of beds is good, and if they are properly dug over and kept tidy, they do not look in the least out of harmony with the general aspect of the winter months; moreover, if a certain amount of hardy edging plants are used, especially in the larger beds, in the general planting-out in the summer, such as variegated Arabis, Golden Feather Pyrethrum, variegated Periwinkle, Cerastium tomentosum, Coprosma, &c., these beds will always have a good deal of colour, and these edgings can, to a great degree, be made permanent. I will not, however, take up your time with more observations upon winter or spring gardening—the latter would require a paper to itself. I will confine what few remarks I have to make on summer bedding-out only.

I have already said that summer bedding-out has often got into disrepute because so many undertake it without proper appliances, and that is not only the case with those who have only small gardens and no glass, but also in large places where bedding-out has, as it were, been superadded to the existing state of things, and gardeners to noblemen and country gentlemen have to supply thousands of bedding-out plants without any additional means being given them. This is, perhaps, one of the worst features of what I call the makeshift system. Plants have to be housed during the winter how and where they can, not according to the requirements of the plants, but according to the means at a gardener's disposal; and the plants are reckoned at hedding-out time not by their quality but by their quantity. It is no uncommon thing to hear one garden compared with another merely by the number of plants that are put out. “Oh! my Lord A——'s garden must be better than Mr. B——'s garden, because his head gardener plants out 100,000 Geraniums, while Mr. B—— has only a few hundreds;” whereas Mr. B——'s few hundreds, if carefully grown in houses suited for their winter growth, not crowded together in boxes or in cutting pans, or stuffed under the stages of vineries, or eking out a miserable existence in cold frames protected with mats and straw, but grown with plenty of light and air and heat and moisture, put into separate pots, properly pinched back, and, in other words, looked after and tended during their growth—these plants, few though they may be, will be far more worthy of being called bedding plants than the thousands belonging to Lord A—— or the Duke of C——, if only grown on the makeshift principle. Another *great fault*, too, in many large gardens is that there is not sufficient variety of plants used—three or four different sorts of flowering zonals, many thousands of each kind being grown; a few thousand tricolors or white variegated; two kinds, perhaps,

of Calceolaria; one kind of Lobelia; and so on. The selections may be good, perhaps, of their kind, but when they are grown by the thousand it becomes monotonous, and the eye tires of seeing large beds of the same kind repeated over and over again. THERE IS NO INTEREST. *When once one has seen a bed of five hundred Tom Thumb Geraniums, or five hundred Mrs. Pollock, one does not very much care to see it again, unless it may be at a certain interval of time, to see how much they have grown.*

I do not always blame the gardener, because many employers see great masses of flowers and plants, reckoned perhaps by tens of thousands, in other gentlemen's and noblemen's gardens, and then they expect their gardeners to do the same without giving proper houses or additional hands, or even giving them liberty to buy new plants: so that they have to go on increasing their stock every year from the old sorts, and perhaps every year being ambitious to bed-out a greater breadth of ground; the plants at bedding-out time each year, instead of being better are rather worse. What is the result? Why, the beds are not properly filled at first. Plants that have been drawn up in vineries or crammed in boxes in cold pits do not recover till nearly half the season is over, and instead of the garden being gay and interesting from the first day it is planted, it is often many weeks before there is any effect produced. It is not, however, only in large gardens, as I have said before, that we find this evil; anyone who attempts to rely entirely, in small gardens, on what are usually called bedding-out plants, without proper means at his disposal, and neglects other plants on that account, is bringing the bedding-out system into disrepute quite as much as the man who beds out his thousands irrespective of their quality. He had far better do his best with perennials carefully attended to, such as Phloxes and Pentstemons and Pansies, Carnations, &c., and then put in a few Geraniums, tender annuals, and other things amongst his other plants, to add variety and interest.

Some passages in the preceding portion of Mr. Peach's paper, which I have printed in italics and capitals, are worthy of consideration. Here is a gentleman deliberately writing a paper in defence of bedding-out, to be read before the Horticultural Congress at Birmingham, and he very candidly and very justly says as true and as severe things of bedding-out as any of those who have attacked the system point-blank. “*There is no interest.*” Thanks, Mr. Peach, for compressing the pith of the whole matter into so short a sentence. Truly a system of gardening, of which one of its advocates can say “there is no interest,” needs defending. And then there is the “*great fault*,” so well pointed out by Mr. Peach, that there is “not a sufficient variety of plants used.” Mr. Peach would doubtless reply, “I said these things not of the system but of bad examples of it.” The answer is that they are demonstrably true of the system. Everybody who has seen many British and continental gardens knows this well. “There is no interest,” is what every human being (including the advocates of the bedding system) must have felt after the first or second view of the bedding-out garden. Ten kinds of Calceolaria instead of two do not alter matters much. A good many students of flower gardening will remember a public garden, where scores of kinds of Pelargoniums were massed out, and where the effect after all was not happy. The gardens of some raisers of zonal variegated Geraniums, who used a great variety of kinds in their bedding, produced at a little distance the effect of being covered with seedy carpet bagging. A greater number of kinds improves matters a little, if good use be made of them; but the central truth of the whole matter is that the geometrical arrangement defeats all attempts at adding interest and true beauty to the flower garden. Every living plant has an individual expression of its own. It may be modest or brilliant in blossom, graceful, or stately, or peculiar in form; it may bear showers of brilliant fruit, or throw nearly all its strength into a foam of flowers; it has its seasons of bud, of blossom, of seed-time, and of rest; but at all times its character is eloquently impressed on the mind of the observer who cares for it. Now it has been the main work of the bedding system to rob plants of their individuality. The ground that might nourish a variety of beautiful life has a mass or streak of from fifty to a thousand individuals of the same kind, all so primly “set” or pinched that the upper line of bloom or foliage presents a dead level. Some may admire such a scene for a moment, but how can there possibly be any interest in it? Even the most extensive weaver of floral ribbons could not say that any sane person ever went along one of them in quest of interest! A similar system

would be death to any art. Imagine a straight row of the Venus of Milo, all rigidly alike, in one of the courts of the Louvre! The absence of interest Mr. Peach observes in what he would consider bad examples of bedding-out, is quite as evident to others in what he would consider good examples. The interest, for example, that Mr. Peach is known to take in the races of bedding Pelargoniums would probably give him some interest in a display of these plants only. He might see new kinds or old favourites, or see them under new circumstances. But this is not the case with thousands of persons for whom these pretty plants have lost all individuality from being repeated year after year in masses and lines *ad nauseam*. Hence such a person naturally rests his eyes a shorter time on the ordinary bedding arrangement or ribbon border than on the new wall paper in his bed-room. And this is no mere "matter of taste" as it is very often thoughtlessly said to be. It is utterly impossible for any person with any knowledge of the glorious richness and infinite variety of the garden flora now within our reach to take any real interest in the geometrical colouring of the ground with plants, which is called bedding out! Hence it is to a great extent simply a question of intelligence as regards plants and also of mental growth. To admire bedding out (I deny *in toto* that any but the feeblest interest can be excited by it) after all indicates a profound capacity for loving plants; and it is pleasant to reflect on the great pleasures in store for such people when the great improvement, of which there have been a good many signs of late, reaches them. If the daub be admired, the picture will be adored. The savage, who has never seen a picture, is delighted with a set of circles or ovals filled with decided colour.

W. R.

Some may object to my argument against geometry (which geometry, indeed, lies at the root of the whole matter), and say, "You want to make the garden a wilderness." And Mr. Peach remarks further on in his paper, "*The mere fact of moving a lawn and forming walks and beds prevents the adoption of flowers au naturel.*" Not so, and many of the happiest features in our gardens ought to teach that this was a thoughtless supposition. The notion that we have no alternative between the rude geometry of bedding out and allowing things to go wild is unworthy of any intelligent person. In all but small places a wilderness may, and often does, form a charming feature; but this should have nothing to do with the garden proper, and it can be proved that we can have every charm and every wild grace of nature in the garden without making it a weed-bed or a tangle. When once people generally are sufficiently impressed with this important truth, a vast improvement will at once take place in our gardens. Much as we have given way to geometry, clipping trees, and other kinds of effete barbarism in gardens, the proof of my statement is now to be found in them. Is Mr. James Backhouse's exquisitely natural and truly artistic underground cave for exotic filmy Ferns a wilderness? Or does he, because he wisely preferred to grow and group his rarities thus, allow them to be destroyed by dank weeds? Are the best parts of the arboretum at Bicton a wilderness because, when there, you are reminded of nothing, see nothing but the majesty and grace of the noblest coniferous trees? The sky, the turf, the air, the trees, are the elements of the picture; you want no more. If the velvety turf, which is *necessary* to the highest effect in gardens, is not welcome to the feet from wet, a dry walk is near: so much of the purely artificial we want for our convenience. I know a few little examples of rock gardens which are as true in the spring of the rock from the turf, and as charmingly covered with Alpine flowers, as any small groups of natural rocks that rise from the short turf of grass or flowers on the Alps; but this does not prevent the owners from having a lawn as velvety as other people. I have a photograph kindly sent by Mr. Ellacombe, which shows a whole colony of Yuccas of different kinds in his garden, many of them rearing their magnificent pyramids of white flowers. I saw nothing half so fine in the Yucca region of America, and chiefly because Mr. Ellacombe can group a large number of species on the same spot. This grand group of Yuccas forms a thoroughly natural-looking one on the margin of the lawn. I could give many other instances, were they needed, to prove that "the mere fact of mowing a lawn and forming walks and

beds" does *not* prevent "the adoption of flowers *au naturel*." Our gardens are beautiful in proportion to their truth to nature. Natural and artistic gardening (synonymous terms) mean the art of expression of the beauty of the vegetable kingdom in gardens. And the most artistic gardener is he who does this without allowing his mind to be sullied by a thought of the figures in elementary books of mensuration or those on the fire-shovel. He is in one sense the most privileged of artists, because he deals with nature herself, and not a representation of her. His work is not done with pigments, but with living trees and plants, and with nature's own air, soil, and water. His materials are now virtually illimitable. And yet in the face of these facts there are many who thoughtlessly echo the ancient dogma, "A garden is a work of art, and therefore you must not attempt the imitation of nature in it." What hollow nonsense this is! A true garden is *not* a work of art in the common sense of the word at all. How much art is there in the best parts of our finest arboretums? A gravelled walk and (sometimes) a few painted and lettered labels. And these I think we shall not be allowed to term "art." How much art in the ordinary sense of the term is visible in the best part of that noble garden at Dropmore? None. How much is the valley scene at Cliveden which we illustrated a few weeks ago? None. The gardener's art is there, but it is hidden as it ought to be. Let it be borne in mind that art in the usual sense means a creation of some sort, whereas the art of the ornamental gardener well used is the arrangement of living plants. The true gardener conceals his art, and, privileged as he is above all men in being the interpreter of nature herself, to modestly conceal his art must ever be his pride. The feeble and foolish gardener glories in geometrical figures, of which nature, it need not be said, knows nothing. The truth is fully expressed by Shakespeare in his beautiful words on grafting in the "Winter's Tale," "THE ART IS NATURE." And the new idea that must replace the false old dogma above named is this, that you can not only imitate nature in the happiest manner in gardens, but you can surpass nature in a thousand ways. For nature's garden is the world, and the struggle for life disperses her children far and wide. But the gardener has the privilege of gathering her stores throughout the wide earth, and, being able to control the struggle for life, he may, in a few acres of land, express the most charming aspects of vegetation of a score of different climes. And he may, moreover, do this in a perfectly artistic, and therefore, from a gardening point of view, perfectly natural manner, without ceasing to shear the turf, or deprive our gardens of one easy grade, or one convenience of arrangement that they now possess.

(To be continued.)

Insects Shaped to the Needs of Flowers.—The flowers of the Yucca plants are peculiarly constructed, so that it is impossible for the pollen to reach the stigma, it being glutinous and expelled from the anthers before the blossoms open. It has been, therefore, the opinion that the plants must needs rely on some artificial agency for fertilisation. Professor C. V. Riley, of St. Louis, has lately discovered that the work is done by a small white moth which he calls *Pronuba Yuccasella*, an insect which forms the type of a new genus. It is most anomalous, from the fact that the female only has the basal joint of the maxillary palpus wonderfully modified into a long prehensile spined tentacle. With this tentacle she collects the pollen and thrusts it into the stigmatic tube, and, after having thus fertilised the flowers, she consigns a few eggs to the young fruit, the seeds of which her larvæ feed upon. The Yucca is the only entomophilous plant known which absolutely depends for fertilisation on a single species of insect, and that insect is remarkably modified for the purpose. The plant and its fructifier are inseparable under natural conditions, and the latter occurs throughout the native home of the former. In the more northern portions of the United States, and in Europe, where American Yuccas have been introduced and are cultivated for their showy blossoms, the insect does not exist, and consequently the Yuccas never produce seed there. The larva of the *Pronuba* eats through the Yucca capsule in which it fed, enters the ground and hibernates there in an oval silken cocoon. In this stage the insect may easily be sent by mail from one part of the world to another, so that seed may be obtained from American Yuccas here without any trouble on the part of the gardener, simply by importing the *Pronuba* cocoon.

NOTES OF THE WEEK.

— THE most attractive plants at present in flower in stoves and Orchid houses are Indian Crocuses or Pleiones. The pretty blooms of these lovely little plants forcibly remind us of our own Crocuses out of doors; their flowers spring from the base of the leafless bulbs close to the surface of the soil in which the plants are grown.

— ONE of the finest specimens of *Agave (Littæa) geminiflora* we have ever seen is now throwing up a flower spike in Mr. Williams's nursery at Holloway. The spike in question, which issues from a huge tuft of deep green rush-like leaves, is now some 9 feet in height, and is densely covered with flower-buds.

— THE Commissioners of Works have caused to be erected in Hyde Park, at 150 yards distance from the so-named "Reformers' Tree," a granite pedestal and iron standard surmounted by a board to mark the spot where it shall be lawful (and there only) to hold public meetings.

— SOME few weeks ago we threw out a suggestion that the Jubilee Gardens at Haverfordwest should not be cut up by letting out the site for building purposes, and destroying the fine old trees for the sake of adding a few pounds a year to the Corporation rental. The matter has since been warmly taken up by the local press, and we believe that nearly every member of the Corporation has individually expressed an opinion favourable to that suggested in our columns. A rate of a halfpenny in the pound would be quite sufficient to convert these gardens into ornamental recreation grounds.

— WE are glad to hear that the distribution of bedding plants in autumn is not confined to the metropolis, for Mr. Pressly, the gardener at Knockmoroon Lodge, Chapelizod, Dublin, has offered five or six hundred Geraniums to the artisans of the district, and the Mayor of Bristol has also made arrangements for the gratuitous distribution of a few thousand plants in pots, fit for cultivation in rooms, obtained from his own garden and from those of friends who have volunteered to join him in the effort to encourage plant cultivation and the love of flowers among the working classes and the poor. These are examples worthy of imitation. In most large establishments there is at this season a host of plants consigned to the rubbish heap that would be a great boon to the poorer classes, who seldom can spare money for floral decoration.

— THE collection of succulents at Sudbury House, Hammer-smith, contains, amongst other interesting plants now in bloom, various species of *Stapelias*. The flowers of these, although in many cases possessing little beauty, rank amongst the most curious of any in the vegetable kingdom; some of them are large and showy, others small and unattractive, but unfortunately nearly all of them emit a nauseous disagreeable odour like that of carrion. So much is this the case that in the centre of the flowers of some of the species flies even deposit their eggs.

— AT the present time there are several clumps of trees, chiefly Ash and Beech, in the neighbourhood of Haverfordwest, that retain the full glory of their summer foliage, without even the shade of autumnal decay. Looking down towards the river Cleddy, from the picturesque little walk known as "the parade," the fine old Ash and Beech trees overhanging the tan-pits look as fresh and green as in the month of July, and present a marked contrast to their general appearance in the middle of the month of October.

— A SAD accident has just occurred at Gevrey (Côte d'Or) at the establishment of MM. Rousseau, wine-growers. The two brothers were occupied in throwing Grapes into a vat in which some had already been placed for three or four days. A man descended to tread them, but fell immediately, suffocated by the noxious gases emitted during the process of fermentation. One of the proprietors hastened to his assistance, but met with a like fate. His brother rushed to aid him, but also fell insensible. The mother then descended, but she also was overpowered, and became unconscious. Assistance arrived, and the bodies were got out, but the three men were dead, and the lady was only brought back to consciousness after long efforts.

— MOST Londoners, says the *Daily News*, knew the pretty walk on the banks of the Thames between Kingston and Hampton Court; and there are few but will hear with astonishment of its present condition. For some inscrutable reason the authorities have permitted vast masses of clay to be deposited there, and these are piled up so as to form a bank 3 feet high and more than a mile in length, utterly destroying the beauty of this favourite public promenade. The view here, comprising, as it does, the Thames on one side and the Home Park on the other, is of an exceedingly attractive character, and all lovers of the Thames, and all defenders of our open spaces, will be sorry to hear of the probability of its being destroyed.

— DR. EICHLER, of Gratz, editor of Martius's "*Flora Brasiliensis*" has accepted the appointment of Professor of Botany at Kiel, Holstein. No change will be involved in the publication of the great *Flora*.

— THE Michigan Central Railway Company is planting a row of American Chestnut trees at all available points along its entire line.

— THE Iowa Agricultural Society offers a prize of two hundred pounds, to be paid in twelve years, for the best ten acres of planted timber in that state.

— WE understand that there is some probability that the Royal Horticultural Society will hold its provincial show next year at Bath.

— THE grand old Cypress hung with Mosses, well known to travellers by the name of the *Arbol de la Noche Triste*, or tree of the Sad Night, which grew near the city of Mexico, and under which Cortes is said to have passed the night of July 1, 1520, after his defeat by the Aztec forces, was destroyed by fire early in this summer.

— WE learn that there is no fear of the owners of Apple orchards in America not finding a market nor good prices for their abundant crops this season; for shippers are buying up the produce of whole orchards where they stand, in order to supply the deficiency of the English market. Late keeping kinds of both Apples and Pears realise good prices.

— FROM thirty trees, planted six years ago, standing 12 feet apart, and covering one-tenth of an acre, a Michigan fruit-grower gathered this year sixty bushels of Plums, of the Canadian Egg and Coe's Golden Drop varieties. The produce realised about 16s. nett per bushel, so that from the above small space the nett value of this year's crop was £48, or £480 per acre.

— AQUARIA seem to be quite the rage at the present time. A new large aquarium is to be built at Great Yarmouth on the north beach. A space of seven acres has been granted by the Corporation a short distance to the left of the Britanua pier, and here, in addition to the aquarium, gardens will be laid out, and a museum and gymnasium built.

— THE *Canada Farmer* says that fruit growing in the Dominion is largely on the increase, and is so successful, that it thinks if a collection could be shown in England, it would do more to promote desirable emigration than any or all the agencies previously employed. Large quantities of Apples are now shipped from Canada to England.

— WE learn with a feeling of gratification like that which welcomes the return of an old acquaintance, that the Garden of Acclimatisation, at Paris, has once again opened its gates, and that its aquarium, its cages, and its stalls have been re-peopled. The Bois de Boulogne itself, though improving, will require time for its recovery, and it will be long before the bare spots where the trees were cut down can again boast the richness of green shade which once lent them so much beauty.

— WE have received the rules and prospectus of the United Horticultural Benefit and Provident Society. This society was established in 1866, to afford relief in times of ill health to gardeners and others connected with horticulture, on the principle of assisting those who endeavour to provide for themselves in calamity and old age. We are glad to say the society is progressing satisfactorily. The Secretary is Mr. McElroy, The Gardens, Moray Lodge, Campden Hill, Kensington, W., than whom a more efficient one could not be found.

— M. RIVIÈRE, director of the Jardin d'Essai, at Algiers, has made some curious observations on the growth of the Bamboos there. He has found that *Bambusa mitis* grows 12 inches in twelve hours by night, and 7½ inches in twelve hours by day; while *B. arundinacea* grows 4½ inches in twelve hours by night, and 6 inches in twelve hours by day. From this it appears that *B. mitis* grows faster in the night-time and *B. arundinacea* faster in the day-time. The rapidity of the nightly growth of *B. mitis* is almost incredible, but it has been well attested by M. Delchevalerie and other authorities.

— WE learn from the *American Agriculturist* that it has been finally decided to locate the arboretum, for which a large bequest was made to the Harvard University by Mr. Arnold, of New Bedford, on a farm, about 10 miles south of Boston, where the School of Agriculture already exists. The details of the work are to be under the immediate control of Professor Sargent, who is eminently well qualified for it. He proposes to lay out the ground (137 acres of well-diversified land) as a natural park, with drives and walks tastefully arranged, and leading from one family to another, in scientific order, of all the trees and shrubs hardy in that climate.

MARKET GARDENING FOR THE SUPPLY OF PARIS.

BY A PARIS MARKET GARDENER.

(Continued from p. 324.)

CHAP. II.

DETAILS OF A MARKET GARDEN.

IN order to understand the operations and management of a market garden, we think it will be useful to describe one as it really exists; namely that belonging to the writer, who has endeavoured to make his establishment unrivalled in the neighbourhood of Paris, and in which, without egotism, he believes he has succeeded. The extent of ground cultivated is 2 acres, 2 roods, and 24 perches. It is watered with a hose after the manner invented by the writer. The plant and implements comprise, first, a steam engine of two-horse power, which works the force-pump when the horse is otherwise employed, and a gin for the same purpose, when the horse can be used. The value of the whole is £68 for the pump, and £80 for the steam-engine. The water is raised through a leaden pipe to the upper part of a riveted sheet-iron reservoir, the capacity of which is 71 cubic feet, and which is placed on a platform 18 feet above the level of the ground, the whole resting on a mass of wood-work and masonry. The cost of the entire arrangement is £52. Two large leaden pipes convey the water to the stoneware pipes, buried at the depth of 16 inches. The water is forced into these pipes by a pressure which varies from 14 lbs. on the square inch, when the reservoir is full, to one-third of that pressure when it is nearly empty. These pipes cost £3 10s. The water is conveyed through 596 yards of stoneware pipes, to which are fitted seventy taps for watering. The watering is done with two india-rubber hoses each 45½ feet long, at the end of which is a copper jet terminating in a rose. Cost, £63 5s. 10d. for the pipes, and £10 8s. 4d. for the hoses and jets.

Nine hundred and fifty frames with their lights, and 3,500 cloches are employed in raising early crops. 800 straw mats are used for covering the frames at night in frost, and for the general protection of the plants in cold weather. Cost of the whole, £628. Four spades, two iron rakes, four iron shovels, two hoes, four dibbles, two garden lines, and two squares complete the list of tools. Cost £2 8s. 4d. For removing the frames, cloches, and crops two hand-barrows with their two pairs of slings. Cost altogether, £1 18s. 4d.

To carry manure and the crops when gathered, there are, besides, four stands for loading, four back-baskets, round baskets of various sizes, hampers immovable, and one large wheelbarrow; cost of the whole, £7. For working the manure, six forks and two crooks; cost £1 5s. 10d. The cultivation of the Tomato requires 1,000 stakes and thirty rolls of iron wire; cost £10. A garden cart and horse to carry the crops to market; cost of the whole, including harness, £69 4s. 2d. The hands employed, exclusive of the master and mistress of the establishment, consist of three men, who live on the premises, one of whom takes the produce to market and brings back manure, after which he goes to work in the garden, where his two companions are constantly employed; annual cost, £64 16s. 8d. Two girls, one of whom spends her time partly in gathering and partly in selling the vegetables, and one woman employed by the day in summer, complete the staff; these cost yearly, £24.

Every year we make—Twenty-four hotbeds for growing Carrots, black-seeded Lettuce, and Spinach; twelve hot and cold beds for Radishes; forty cold beds for Parsley, Sorrel, Parsnips, various kinds of Lettuce and Cauliflowers; thirty-six beds for Roman Lettuces, some grown under cloches, others in cold beds with Carrots. The Melons and Tomatoes require from seventy to eighty wide trenches, when they are grown under cloches, and some trenches are made for early French Beans. The rest of the ground is taken up according to the season with Cauliflowers, Cabbages, Onions, Scallions, Chives, Parsley, Chervil, Sorrel, red and black Radishes, Leeks, Carrots, Roman Lettuce, common Lettuce, and Spinach, all grown in the open air in cold beds.

An establishment stocked in this way yields on an average the following yearly crops:—In spring: 10,800 heads of Laitne Noire, grown on hotbeds; 240 bundles of Spinach grown in the same way, average weight of each bundle, 3 lbs.;

1,600 bundles of Carrots, grown in the same way, average weight of each bundle, 4 lbs.; 1,000 bundles of Radishes, grown both in hotbeds and in the open air; 11,000 heads of George's Lettuce, grown in cold beds; 500 bundles of Sorrel, grown in cool beds, average weight of each bundle, 3 lbs.; 500 bundles of Parsley, average weight of each bundle, 2 lbs.; 10,500 heads of Cos Lettuce, grown in cool beds; 1,000 bundles of Carrots, grown in cool beds, average weight of each bundle, 4 lbs.; 1,500 heads of Cauliflowers, grown in cool hotbeds; 8,000 heads of George's and red Lettuce, grown in the side beds (shown in plans); 6,000 heads of red Lettuce (ditto); 3,500 heads of Roman Lettuce, grown in the squares; 2,500 bundles of Radishes, each bundle containing three handfuls (the retail bundle contains only one handful); 6,000 heads of Cabbages; 1,200 bundles of Onions, average weight of each bundle, 4 lbs.; 1,200 bundles of Leeks from seed, average weight of each bundle, 4 lbs.; 800 bundles of Scallions, sown in autumn, average weight of each bundle, 2 lbs.; 1,200 bundles of Scallions, sown in spring, average weight of each bundle, 2 lbs.; 300 bundles of Sorrel, grown in the open air, average weight of each bundle, 3 lbs.; 500 punnets of Regence Corn-salad, grown on the Melon-beds, average weight of each punnet, 2 lbs.; 1,200 bundles of Carrots, grown in the open air, average weight of each bundle, 4 lbs.; 200 bundles of Chervil, average weight of each bundle, 2 lbs.; 200 bundles of Chives, average weight of each bundle, 14 oz.

All the crops here enumerated are gathered before July, when the summer crops come in. These comprise the following:—3,000 Melons, grown in trenches under frames and cloches, and on spent beds; 4,500 stools of Tomatoes, producing 5,000 punnets of fruit for market; 5,000 dozen of fine fruits; 30,000 heads of Chicory, Roman Lettuce, and common Lettuce, planted among the white Celery; 10,000 heads of the same plants, grown among the Endive; 12,000 heads of Endive, grown among the Cabbages in the squares; 120 small baskets of long Peppers; 3,000 heads of autumn Cauliflowers; 1,000 bundles of Carrots, gathered in October; 1,000 bundles of transplanted Leeks.

These crops are gathered in by the month of November, when the winter crops succeed. These are as follows:—6,000 plants of Turnip-Celery (*céleri-rave*) planted in June; 35,000 plants of white Celery planted in July; 6,000 punnets of Corn-salad; 100 bundles of Chervil. The market for these crops ends in February, when the gathering and sale of the early spring crops recommences.

(To be continued.)

A PLEA FOR PEOPLE'S PARKS.

A PROJECT has lately been started, says the *Lancet*, which, whatever other people may think of it, at any rate merits the approval of all physicians and physiologists. A committee has been formed for the purpose of preserving the Alexandra Park as a place of healthful recreation for the millions who, from lack of time and money, are debarred from starting on those annual mountain-climbing tours to Scotland or Switzerland now so common, or from resorting for a few weeks to some pleasant sea-side place nearer home. Physical health and energy are best preserved by outdoor labour and outdoor amusements, and there is nothing that conduces so much to the development of healthy tastes and morality as such exercises and the enjoyment of nature. A man who goes to his home fatigued after a game of cricket or football, or after a long walk in the country, is a healthy, manly, and generally a happy type of man. If this be the case with adults, how much more is it with the young of both sexes, whose natural instincts lead them to prefer "a day in the country" to any other enjoyment. Of this a striking illustration is afforded by the experience of the Crystal Palace during the twenty years of its existence. During that time it has been visited by over thirty millions of people, and yet only thirty charges against public morality have been made. It is only to do the poorer classes justice to say that, as far as lies in their power, they always seek wholesome recreation in the open air. Of this we may be assured, that changed they will and must have. The hours for labour are being shortened, wages are rising, and it is, therefore, of far greater importance than is generally supposed for the welfare of the country that these classes, especially the younger members of them, should grow up into healthy and contented men and women.

THE ARBORETUM.

HARDY TREES AND SHRUBS.

BY GEORGE GORDON, A.L.S.

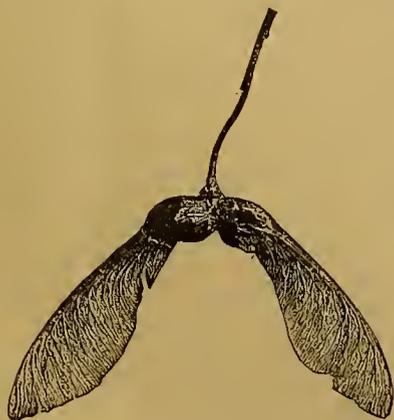
THE NEAPOLITAN MAPLE (*ACER NEAPOLITANUM*).

This forms a large rapid growing tree, from 50 to 60 feet high, with a dense, compact, round head, thickly furnished with large leaves. It is a native of Naples, where it grows on all the hills and low mountains of Camaldoni, Castellamare, and the Abruzzi, and is stated by



Leaf of Neapolitan Maple.

Professor Tenore, who first discovered it, to acquire colossal dimensions, and to form a striking tree in the woods of Lucania, the Basilicata, and in Calabria. It grows freely in most soils and situations. It was first introduced in 1825. The leaves are large, somewhat rounded in outline, five lobed, slightly cordate at the base, rather wavy, and on long footstalks. They are of a deep glossy green, quite smooth above, and densely covered with a short, whitish, and velvety tomentum beneath. The lobes are broad,



Fruit or Key of Neapolitan Maple.

somewhat angular and pointed, repandly toothed on the edges, and not deeply divided. The flowers are in drooping terminal corymbs, greenish yellow, and produced in May. The fruit or keys are medium sized, on long footstalks, and with thick carpels, terminated by long, narrow-pointed wings, which are rather widely extended. The synonyms are *Acer obtusatum* var. *Neapolitanum* and *hybridum*. A full-sized leaf of this species is 9 inches long, including the foot-stalk, which varies from 3 to 5 inches in length, and its breadth is about 6 inches.

ASA GRAY ON THE SEQUOIAS.

At a meeting of the American Association for the Advancement of Science, held at Dubuque (Iowa) on August 21, Professor Asa Gray, the retiring president, delivered an address mainly devoted to the history during historic and pre-historic times of the "big trees" (*Sequoia gigantea* and *S. sempervirens*) and to the important inferences to be drawn therefrom as to the origin and succession of living beings on the globe. After some preliminary notice of the physical features of the country traversed in passing from the eastern to the western shores of the United States, Dr. Gray proceeded as follows:—

To gratify a natural interest, and to gain some title for addressing a body of practical naturalists and explorers, I have made a pilgrimage across the continent; I have sought and viewed in their native haunts many a plant and flower which, for me, had long bloomed unseen, or only in the hortus siccus. I have been able to see for myself what species and what forms constitute the main features of the vegetation of each successive region, and record—as the vegetation unerringly does—the permanent characteristics of its climate. Although no account and no photographic representation of either species of the far-famed Sequoia trees gives any adequate impression of their singular majesty—still less of their beauty—yet my interest in them did not culminate merely nor mainly in consideration of their size and age. Other trees in other parts of the world may claim to be older. Certain Australian gum trees (*Eucalypti*) are said to be taller. Some, we are told, rise so high that they might even cast a flicker of shadow upon the summit of the pyramid of Cheops. Yet the oldest of them doubtless grew from seed which was shed long after the names of the pyramid builders had been forgotten. So far as we can judge from the actual counting of the layers of several trees, no Sequoia now alive can much over-date the Christian era.

One notable thing about these Sequoia trees is their isolation. Most of the trees associated with them are of peculiar species, and some of them nearly local. Yet every Pine, Fir, and Cypress in California is in some sort familiar, because it has near relations in other parts of the world; but the Redwoods have none. The Redwood—including in that name the two species of "big trees"—belongs to the general Cypress family, but is *sui generis*. Thus isolated systematically, and extremely isolated geographically, and so wonderful in size and port, they more than other trees suggest questions. Were they created thus local and lonely, denizens of California only; one in limited numbers in a few choice spots on the Sierra Nevada, the other only along the coast-range from the Bay of Monterey to the frontiers of Oregon? Are they veritable Melchisedeks, without pedigree or early relationship, and possibly fated to be without descent? Or are they now coming upon the stage (or, rather, were they coming but for man's interference), to play a part in the future? Or are they remnants—sole and scanty survivors of a race that has played a grander part in the past, but is now verging to extinction? Have they had a career, and can that career be ascertained or surmised, so that we may at least guess whence they came, and how, and when? Time was, and not long ago, when such questions as these were regarded as useless and vain—when students of natural history, unmindful of what the name denotes, were content with a knowledge of things as they now are, but gave little heed as to how they came to be so. Now, such questions are held to be legitimate, and perhaps not wholly unanswerable. It cannot now be said that these trees inhabit their present restricted areas simply because they are there placed in the climate and soil of all the world most congenial to them. These must indeed be congenial or they would not survive. But when we see how Australian Eucalyptus trees thrive upon the Californian coast, and how these very Redwoods flourish upon another continent, we must abandon the notion of any primordial and absolute adaptation of plants to their habitat, which may stand in lieu of explanation, and so preclude our inquiring any further. The harmony of nature and its admirable perfection need not be regarded as inflexible and changeless. Nor need nature be likened to a statue, or a cast in rigid bronze, but rather to an organism, with play and adaptability of parts, and life and even soul informing the whole. Under the former view, Nature would be "The faultless monster which the world ne'er saw," but inscrutable as the Sphinx, whom it were vain, or worse, to question of the whence and whither. Under the other, the perfection of Nature, if relative, is multifarious and ever renewed; and much that is enigmatical now may find explanation in some record of the past.

That the two species of Redwood we are contemplating originated as they are, and for the part they are now playing, is, to say the least, not a scientific supposition, nor in any sense a probable one. Nor is it more likely that they are destined to play a conspicuous part in the future, or that they would have done so even if the Indian's fires and the white man's axe had spared them. The Redwood

of the coast, *Sequoia sempervirens*, had the stronger hold upon existence, forming, as it did, large forests throughout a narrow belt about 300 miles in length, and being so tenacious of life that every large stump sprouts into a copse. But it does not pass the Bay of Monterey, nor cross the line of Oregon, although so grandly developed not far below it. The more remarkable *Sequoia gigantea* (Wellingtonia) of the Sierra exists in numbers so limited that the separate groves may be reckoned on the fingers, and the trees of most of them have been counted, except near their southern limit, where they are said to be more copious. A species limited to individuals holds its existence by a precarious tenure; and this has a foothold only in a few sheltered spots, of a happy mean in temperature and locally favoured with moisture in summer. Even then, for some reason or other, the Pines with which they are associated (*Pinus Lambertiana* and *P. ponderosa*), the Firs (*Abies grandis* and *A. amabilis*), and even the incense Cedar (*Libocedrus decurrens*), possess a great advantage, and though they strive in vain to emulate their size, wholly overpower the *Sequoia* in numbers. "To him that hath shall be given." The force of numbers eventually wins. At least, in the commonly visited groves, *Sequoia gigantea* is invested in its last stronghold, can neither advance into more exposed positions above, nor fall back into drier and barer ground below, nor hold its own in the long run where it is, under present conditions; and a little further drying of the climate, which must once have been much moister than now, would precipitate its doom. Whatever the individual longevity, certain, if not speedy, is the decline of a race in which a high death-rate afflicts the young. Seedlings of the big trees occur not rarely, indeed, but in small proportion to those of associated trees; and small indeed is the chance that any of these will attain to "the days of the years of their fathers." "Few and evil" are the days of all the forest likely to be, while man, both barbarian and civilised, torments them with fires, fatal at once to seedlings, and at length to the aged also. The forests of California, proud as the State may be of them, are already too scanty and insufficient for her uses. Two lines, such as may be drawn with one sweep of a small brush over the map, would cover them all.

The Coast Redwood—the most important tree in California—although a million times more numerous than its relative of the Sierra, is too good to live long. Such is its value for lumber, and its accessibility, that judging the future by the past, it is not likely, in its primeval growth, to out-last its rarer fellow species. Happily man preserves and disseminates as well as destroys. The species will probably be indefinitely preserved to science, and for ornamental and other uses in its own and other lands, and the more remarkable individuals are likely to be sedulously cared for, all the more so as they become scarce. One third question remains to be answered: Have these famous *Sequoias* played in former times and upon a larger stage a more imposing part, of which the present is but the epilogue? We cannot gaze high up the huge and venerable trunks without wishing that these patriarchs of the grove were able, like the long-lived antediluvians of scripture, to hand down to us, through a few generations, the traditions of centuries, and so tell us somewhat of the history of their race. Fifteen hundred annual layers have been counted or satisfactorily made out upon one or two fallen trunks. It is probable that close to the heart of some of the living trees may be found the circle that records the year of our Saviour's nativity. A few generations of such trees might carry the history a long way back. But the ground they stand upon, and the marks of very recent geological change and vicissitude in the region around, testify that not very many such generations can have flourished just there, at least in an unbroken series. When their site was covered by glaciers these *Sequoias* must have occupied other stations, if, as there is reason to believe, they then existed in the land. I have said the Redwoods have no near relatives in the country of their abode, and none of their genus anywhere else. Perhaps something may be learned of their genealogy by inquiring of such relatives as they have. There are only two of any particular nearness of kin, and they are far away. One is the bald Cypress, our Southern Cypress, *Taxodium distichum*, inhabiting swamps of the Atlantic coast from Maryland to Texas, thence extending into Mexico. It is well known as one of the largest trees of our Atlantic forest district; and although it never (except perhaps in Mexico and in rare instances) attains the portliness of its western relatives, yet it may equal them in longevity. The other relative is *Glyptostrobus*, a sort of modified *Taxodium*, being about as much like our bald Cypress as one species of Redwood is like the other.

Now species of the same type, especially when few and the type peculiar, are in a general way associated geographically, *i. e.*, inhabit the same country or (in a larger sense) the same region. Where it is not so, where near relatives are separated, there is usually something to be explained. Here is an instance. These four trees, sole representatives of their tribe, dwell almost in three separate quarters

of the world; the two Redwoods in California, the Bald Cypress in Atlantic North America, its near relative, *Glyptostrobus*, in China. It was not always so. In the tertiary period, the geological botanists assure us, our own *Taxodium* or Bald Cypress, and a *Glyptostrobus* exceedingly like the present Chinese tree, and more than one *Sequoia*, co-existed in a fourth quarter of the globe, *viz.*, in Europe. This brings up the question: Is it possible to bridge over these four wide intervals of space (amounting to three-quarters of the earth's circumference), and the much vaster interval of time, so as to bring these extraordinarily separated relatives into connection? The evidence which may be brought to bear upon this question is various and widely scattered. Some interesting facts may come out by comparing generally the botany of the three remote regions, each of which is the sole home of one of these three genera, *i. e.*, *Sequoia* in California, *Taxodium* in the Atlantic United States, and *Glyptostrobus* in China, which compose the whole of the peculiar tribe I am speaking of.

Note, then, first, that there is another set of three or four peculiar trees in the case of the Yew family, which has just the same peculiar distribution, and which therefore may have the same explanation, whatever that explanation be. The genus *Torreya*, which commemorates our botanical Nestor, and a former president of this association, Dr. Torrey, was founded upon a tree rather lately discovered (that is, about thirty-five years ago), in Northern Florida. It is a noble Yew-like tree, and very local, being known only for a few miles along the shores of a single river. It seems as if it had somehow been crowded down out of the Alleghanies into its present limited southern quarters, for in cultivation it evinces a northern hardness. Now, another species of *Torreya* is a characteristic tree of Japan, and the same, or one very like it indeed, inhabiting the Himalayas, belongs therefore to the Eastern Asiatic temperate region, of which China is a part, and Japan, as we shall see, the portion most interesting to us. There is only one more species of *Torreya*, and that is a companion of the Redwoods in California. It is the tree locally known under the name of the Californian Nutmeg. In this case the three are near brethren, species of the same genus, known nowhere else than in these habitats. Moreover, the *Torreya* of Florida has growing with it a Yew tree, and the trees of that grove are the only Yew trees of Eastern America, for the Yew of our northern woods is a decumbent shrub. The only other Yew trees in America grow with the Redwoods and the other *Torreya* in California, and more plentifully further north, in Oregon. A Yew tree equally accompanies the *Torreya* of Japan and the Himalayas, and this is apparently the same as the common Yew of Europe.

So we have three groups of trees of the great coniferous order, which agree in this peculiar geographical distribution—the Redwoods and their relatives, which differ widely enough to be termed a different genus in each region; the *Torreya*s, more nearly akin, merely a different species in each region; the Yews, perhaps all the same species, perhaps not quite that, for opinions differ, and can hardly be brought to any decisive test. The Yews of the Old World, from Japan to Western Europe, are considered the same; the very local one in Florida is slightly different; that of California and Oregon differs a very little more; but all of them are within the limits of variation of many a species. However that may be, it appears to me that these several instances all raise the same question, only with a different degree of emphasis, and if to be explained at all, will have the same kind of explanation.

Continuing the comparison between the three regions we are concerned with, we note that each has its own species of Pines, Firs, Larches, &c., and of a few deciduous-leaved trees, such as Oaks and Maples; all of which have no peculiar significance for the present purpose, because they are of genera which are common all round the northern hemisphere. Leaving this out of view, the noticeable point is that the vegetation of California is most strikingly unlike that of the Atlantic United States. The two possess some plants, and some peculiarly American plants in common—enough to show, as I imagine, that the difficulty was not in the getting from the one district to the other, or into both from a common source, but in abiding there. The primordially unbroken forest of Atlantic North America, nourished by rainfall distributed throughout the year, is widely separated from the western region of sparse and discontinuous tree-belts of the same latitude on the western side of the continent, where summer rain is wanting or nearly so, by immense treeless plains and plateaus of more or less aridity, traversed by longitudinal mountain ranges of a similar character. Their nearest approach is at the north, in the latitude of Lake Superior, where on a more rainy line, trees of the Atlantic forest and that of Oregon may be said to interchange. The change of species and of the aspect of vegetation in crossing, say on the forty-seventh parallel, is slight in comparison with that of the thirty-seventh, or near it. Confining our attention to the lower latitude, and under the exceptions already specially noted, we may say that almost every characteristic form in

the vegetation of the Atlantic States is wanting in California, and the characteristic plants and trees of California are wanting here. California has no Magnolia or Tulip Trees, nor Star Anise tree; no so-called Papaw (Asimina); no Barberry of the common single-leaved sort; no Podophyllum, or other of the peculiar associated genera; no Nelumbo or white Water Lily; no Prickly Ash nor Sumach; no Loblolly Bay nor Sturtia; no Basswood or Linden trees; neither Locust, Honey Locust, Coffee-tree (Gymnocladus), nor Yellow-wood (Cladrastis); nothing answers to Hydrangea or Witch Hazel, to Gum trees (Nyssa), to Liquidambar, Viburnum, or Diervilla; it has few Asters and Golden Rods; no Lobelias; no Huckleberries, and hardly any Blueberries; no Epigaea, charm of our earliest eastern spring, tempering an icy April wind with a delicious wild fragrance; no Kalmia nor Clethra, nor Holly, nor Persimmon; nor Catalpa tree, nor Trumpet Creeper (Tecoma); nothing answering to Sassafras, nor Benzoine tree, nor Hickory; neither Mulberry nor Elm; no Beech, nor Chestnut, Hornbeams or Iron-wood, nor a proper Birch tree; and the enumeration might be continued very much farther, by naming herbaceous plants and others familiar only to botanists. In their place California is filled with plants of other types, trees, shrubs, and herbs, of which I will only remark that they are, with one or two exceptions, as different from the plants of the eastern Asiatic region we are concerned with (Japan, China, and Manchuria) as they are from those of Atlantic North America. Their near relatives, when they have any in other lands, are mostly southward, on the Mexican plateau, many as far south as Chili. The same may be said of the plants of the intervening great plains, except that northward and in the subsaline vegetation there are some close alliances with the flora of the Steppes of Siberia. And along the crest of high mountain ranges the arctic Alpine Flora has sent southward more or less numerous representatives through the whole length of the country.

NOTES AND QUESTIONS ON TREES AND SHRUBS.

The Value of a Walnut Stump.—The gnarled and curly grain of the wood of a walnut stump renders it very valuable for cabinet-work. Many old stumps have been dug up, the lumber from one of which has sold for as much as £30.

The Silvery Cedar of Lebanon.—Will any of your readers kindly inform me where I may purchase plants of this, of which there is a fine specimen in the Pinetum at Dropmore? I have tried to find it in a good many nurseries, but in vain.—C. L.

Larix Kämpferi.—Is this species hardy? A plant I had last year perished, though in a good dry position. Have any of the plants distributed formed good specimens near London?—J. B.—[Yes; there are grand specimens in Mr. Bohn's garden at Twickenham. The tree is quite hardy about London.]

The Virginian Creeper.—Permit me to call your readers' attention to the glorious effects that result from planting this old favourite so that it may run over picturesque but not rare or valuable trees here and there. Its highest beauty is not seen on wall or trellis, fine as it is in any position.—A LOVER OF ARTISTIC GARDENING.

Beech Trees and Lightning.—Apropos of this subject, the noble specimen of the Weeping Beech, in Mr. Richard Smith's nursery, at Worcester, was struck by lightning about fourteen years ago, and much shattered in the upper part. The owner despaired of its life, but it recovered, and is now one of the finest and most picturesque trees of the kind in England.—R.

The Best Apple Trees for Ornamental Planting.—I have begun to plant fruit trees for ornament, and having, I think, found out the Pears that form the handsomest trees for town or pleasure grounds, I shall be grateful to any of your readers who will tell me of the kinds of Apples that form the largest and most ornamental trees.—F. LEWIS.

Variiegated Ivy on a Chili Pine.—In Mr. Smith's nursery at Worcester there is a large Araucaria which lost its lower limbs for a distance of 3 feet or so in the severe winter of 1869. This portion of the stem is now clothed with a handsome variegated Ivy, which also clothes the ground near the base of the tree. The effect is charming, and the subdued growth of the variegated Ivy cannot injure the tree, as would that of the common Ivy.

The Japan Quince Blooming in Autumn.—This has a deservedly great repute as a brilliant spring flowering shrub; but I am not aware that its autumn-flowering qualities as a wall plant are known, or, indeed, whether it manifests this habit generally as it does with me. Above my porch, facing east, it is now (Oct. 12) dotted with vividly coloured and large blossoms, the brightest in my garden.—J. H. W., Worcester-shire.

Removing Large Evergreen Oaks.—Will you be good enough to inform me if I may venture to remove several large Evergreen Oaks which are too near my house, but which I should not like to destroy.—E. W. S. [They may be removed with safety if all the main branches are headed off near the stem, and the stem itself cut at from six to nine feet from the ground. In this case the roots may be cut in hard too. Trees treated thus are easily transplanted, and soon break forth into vigorous heads.]

Unseasonable Flowering of the Laburnum.—I enclose you flowers from a Laburnum tree now in blossom in my garden. Is it not strange for it to do so at this time of year? The tree was covered with blossom the spring before last, but last spring not a flower was to be seen on it.—H. B. K., *Burker House, Titley, Herefordshire.*—[The flowers you have sent are very handsome and perfect. In mild autumns a few straggling flowers may often be found on Laburnums about this time, but not a full crop of blossoms.]

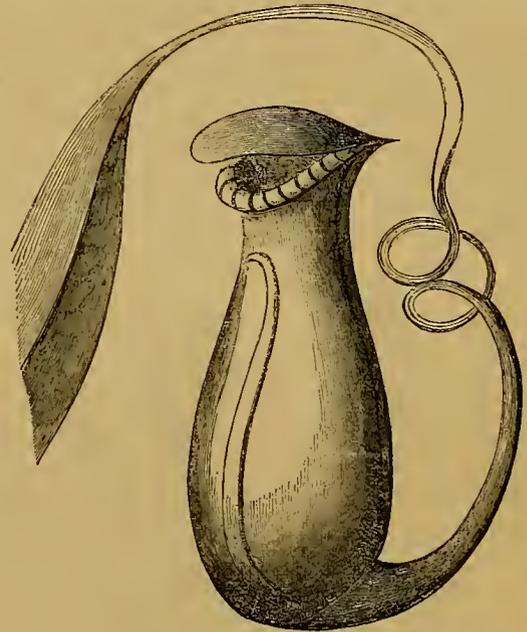
Amgdalus communis pyramidata.—This is a very ornamental form of the common Almond tree. In habit it somewhat resembles Robinia pyramidata, but is more graceful, being more conical and less tapering. The branches are numerous, nearly erect, and stand close together. The leaves are very much pointed and of a handsome green colour. The fruit is soft-shelled, large, sweet, and well-flavoured, and is produced even when the tree is small and young. The habit of the tree renders it a suitable subject for planting along the sides of avenues in the same way that the Robinia is often used.

THE INDOOR GARDEN.

PITCHER-PLANTS.

As much uncertainty and confusion of ideas respecting these plants are by no means uncommon, the following account of them will probably be useful to some of our readers.

The true Pitcher-plants (Nepenthes) are almost exclusively confined to the islands of the East Indian Archipelago, a few species only being found on the continent of Asia, two in Madagascar, and one in Ceylon. About twenty species in all are known. They are herbaceous, or woody plants, with alternate leaves of an elongated oval shape, terminating in a tendril formed by the excurrent midrib, at the end of which the pitcher is developed, being, it is supposed, a modification of a gland situated at the apex of the midrib. The pitchers, while preserving the same general aspect, vary much in size, shape, and colour in the different species. Those of *N. Rajah* are sometimes 12 inches long by 6 inches in diameter, while those of some other species are very much smaller. In all the *Nepenthes* the pitcher is surmounted by an operculum or lid, which closes the pitcher while in a young state, but as it advances to maturity the lid gradually opens and at length



Pitcher of *Nepenthes*.

stands nearly erect. The flowers are small and insignificant and are produced in spikes or racemes on the end of the stem. Male and female flowers occur on different plants.

The principal kinds in cultivation are *N. ampullacea*, *N. ampullacea picta*, *N. distillatoria*, *N. distillatoria rubra*, *N. Dominiana*, *N. gracilis*, *N. gracilis major*, *N. hybrida*, *N. hybrida maculata*, *N. Hookeriana*, *N. laevis*, *N. phyllamphora*, *N. Rafflesiana*, *N. sanguinea*, and *N. villosa*. They all require hothouse treatment, and thrive best in a moist atmosphere, with a temperature of from 70° to 80° in summer, and a minimum of 65° in winter. The soil which suits them best is a compost of sphagnum and good fibrous peat in the proportion of two parts of the former to one of the latter. During the summer they should be plentifully supplied with water. Our first illustration represents the end of a leaf of *Nepenthes* with the pitcher attached.

Closely allied to the *Nepenthes* is the little *Cephalotus follicularis*. This is a dwarf, almost stemless plant, found in marshy ground near St. George's Sound, on the N.E. coast of Australia. The pitchers, which are furnished with true lids, and very much resemble those of the *Nepenthes*, vary in size from 1 to 3 inches in length, and are of a dark green colour, tinged with blackish purple; the

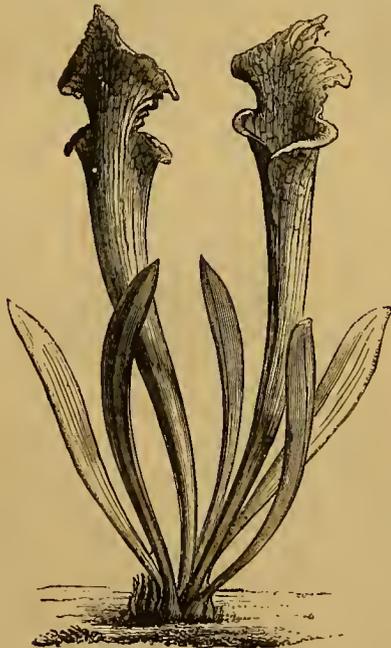
mouth is ornamented with an annular disk, and the lid is netted with veins of reddish pink. In addition to the pitchers, this plant also produces separate leaves of an oblong or elliptical shape. The flowers, which are borne in a long spike on a stalk from 10 to 15 inches high, are insignificant, consisting merely of a small six-parted calyx, without a corolla. It should be grown in about equal parts of peat and live sphagnum, and the pot should be placed in a pan of water at the warm end of a greenhouse, or the cool end of a stove.

Very different from the preceding are the American Pitcher-plants, of which there are three genera, viz., *Sarracenia*,



Cephalotus follicularis.

Darlingtonia, and *Heliamphora*. The *Sarracenia*s are confined to the Eastern United States and Canada, and comprise six species, *S. purpurea*, *S. flava*, *S. rubra*, *S. variolaris*, *S. Drummondii*, and *S. psittacina*. The pitchers of these plants are very unlike those of *Nepenthes* in shape and manner of growth. Springing from the root of the plant, they present the appearance of funnel-shaped vessels, usually standing erect, and in some of the species attaining a length of 3 feet. On the top of each pitcher there is a lamina or leaf-like appendage, which is generally called the lid, although it never closes over the mouth of the pitcher, as in those of the *Nepenthes*. The inflorescence

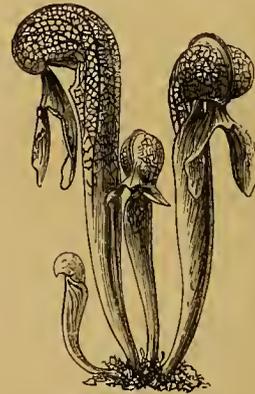


Sarracenia flava.

of the *Sarracenia* is also different from that of the *Nepenthes*, and consists of a solitary flower of comparatively large size on a leafless scape, which rises from among the bases of the pitchers. The style of the flower is curiously expanded into a broad umbrella-shaped disk, bearing the five small stigmas underneath at the edge. From the peculiar appearance presented by the flower, in consequence of this expansion of the style, it has been popularly named in America the "Side-saddle flower." All the *Sarracenia*s thrive well in an intermediate house, and are best grown in a mixture of peat and sphagnum, with enough silver sand and small corks to keep the soil open; it should also be kept constantly

and well moistened during summer, and never allowed to become dry in winter. *S. purpurea* has survived our winters planted out in an open bog-bed.

Of the genus *Darlingtonia*, only one species is known, namely, *D. californica*. This is found in marshy places in California, and produces pitchers from 15 inches to 2½ feet in length, which have some resemblance to those of the *Sarracenia*s, but differ from them in having the upper part arched over like an inflated hood, from the base of which, in front, depends a broad, deeply two-lobed, wattle-like lamina. On raising this lamina the orifice of the pitcher is discovered under the hood. The inside of the pitcher is thickly covered with short sharp hairs, pointing downwards, and effectually opposing the return of any insect that enters. Pitchers are sometimes found more than half full of the remains of insects which have thus perished, forming a solid mass of animal *débris*. The pitchers of the *Sarracenia*s are furnished with similar hairs, but less abundantly. The flowers of the *Darlingtonia* are solitary, and nodding at the apex of a smooth stalk, which is furnished with straw-coloured scales, and varies from 2 feet to 4 feet in length. When fully expanded, the flower is about 2 inches in diameter; the calyx consists of five straw-coloured acute sepals nearly as long as the petals, which are of a pale purple colour. The curious umbrella-shaped expansion of the style, so conspicuous in the *Sarracenia*s, is entirely wanting. The *Darlingtonia* may be grown in a pot in a mixture of equal parts of peat and sphagnum,



Darlingtonia californica.

care being taken to keep the pot standing in a pan of water. It has also succeeded admirably when grown in the open bog-bed.

The South American genus of Pitcher-plants (*Heliamphora*), which is found in the marshes of Guiana, is also confined to a single species (*H. nutans*). The pitchers of this plant are produced in the same manner as those of the *Sarracenia*, but are of a compressed egg-shaped form, with a very broad oblique mouth, set at an angle with the rest of the pitcher. The lamina is exceedingly small and almost triangular in shape. The flowers are white or pale rose-coloured, drooping, and produced in a raceme on an erect scape, which issues from a single stem-clasping leaf near the base. They are usually four or five in number, and are quite distinct in structure and appearance from those of all the other Pitcher-plants. This plant has not yet been brought into cultivation, and except as a contrast to the other forms of Pitcher-plant, appears to be of little value.

W. M.

Disappearance of the Paper-reed.—I read in *THE GARDEN* (p. 245) that the Paper-reed of the ancients has become extinct in Egypt, and that its disappearance seems to point to the fact, that it was not originally a native of that country. Is this known to be a fact? if so what other region did it come from? and who carefully cultivated it? As I read in the prophecy of Isaiah, ch. xix. verse 7, "That the Paper-reeds by the brooks, by the mouth of the brooks, and everything sown by the brooks, shall wither, be driven away, and be no more."—M. A. C. [It is not "known to be a fact" that the Paper-reed was not originally a native of Egypt, as we do not possess any records which could enlighten us upon that point. It is highly probable, however, that it was introduced from the South of Europe, where it still flourishes, particularly in the island of Sicily, and there can be little

doubt that it was cultivated by the Egyptians, otherwise the supply would soon have become exhausted. The verse in Isaiah seems to confirm this, as it mentions the Paper-reeds with the things "sown by the brooks," evidently anticipating the disappearance of man's works from the then busy scene. The invention of paper from rags having rendered the Papyrus comparatively valueless, we can easily imagine that, as existing plants were cut down for other purposes, there was no great inducement to replace them by fresh sowings or plantings, and in this we believe we have a fair explanation of the gradual and now total disappearance from Egypt of the once abundant Paper-reed.]

THE GARDEN IN THE HOUSE.

CULTURE OF PLANTS IN ROOMS.

(Continued from p. 320.)

PROPAGATION BY CUTTINGS.

CLEANLINESS requires a daily examination of the pots, and the removal of any weeds or green mouldy overgrowth which may appear on the surface of the soil, as also any withered leaves that may occur. These should be cut off with a sharp pair of scissors, as the cuttings will thereby be less disturbed than by plucking them off. Ventilation is of the first importance to cuttings covered with a bell-glass or other covering. These coverings should also be removed daily, and the condensed moisture carefully wiped off the inside. Re-cutting is necessary when, in consequence of too much moisture in the soil or sand, the lower parts of the cuttings begin to rot. In general, it may be known by the cuttings turning yellow, or by the cessation of growth at the top, that all is not right. The cutting should then be taken up and examined. If the cut at the base is in a healthy condition and well cicatrized, it will be sufficient to remove all the bad leaves and replant the cutting. But if it looks decayed and brown, it should be cut back to a sound part immediately below a joint or knot, and then replanted. Sometimes the decay has only just commenced, and then it will suffice to cut off a very thin slice without sacrificing an entire joint. If several cuttings in the same pan are in the same condition, it is advisable to transplant them all into another pan filled with good fresh soil and sand. In slow-rooting evergreen plants, it sometimes happens that instead of roots a thick callus is formed around the base of the cutting. Part of this callus should be pared off with a sharp knife, and the cutting replanted in another pan filled with fresh soil. Watering and sprinkling require to be carefully done in the case of cuttings. Cactuses and Stapelias are usually not watered until the roots have begun to appear, and even then water should be cautiously given. Other succulents, such as Mesembryanthemum and Crassula, should be carefully watered when the soil is dry, but should not be sprinkled overhead. Cuttings of other plants should, on the contrary, be watered as often as the soil is dry. Those which are placed under bell-glasses or other coverings should not have these coverings replaced after watering until the water has somewhat dried off the leaves, which should be only slightly sprinkled in bright sunny weather. Uncovered cuttings may have both leaves and sand slightly sprinkled as often as the surface of the latter becomes dry. A copious watering, sufficient to drench the contents of the pan, should only be given when the soil is thoroughly dried up. No water should be used except lukewarm rain-water, or river water free from lime.

When the cuttings exhibit a stronger and more luxuriant growth, it is a sign that they have begun to root. This can be ascertained by taking them up very carefully, so as not to break off the tender and brittle young roots, and then quite a different treatment is commenced. Uncovered cuttings should now be more plentifully sprinkled overhead, but the soil should still be only occasionally watered when it is too dry. Covered cuttings should have air given them by raising the window, or by placing a piece of wood under the edge of the bell-glass. They should also be watered when they require it. As they grow stronger, more air should be admitted, and the covering should at length be removed altogether. Well-rooted cuttings, thus hardened off, should then be carefully separated,

without injuring their roots, and planted in separate pots in suitable soil.

The cuttings of many plants form roots much better in a room when placed in water than when planted in soil. A phial is filled with water and the cutting inserted in it to the depth of about an inch. Paper is wrapped round the cutting so as to close the mouth of the phial, which is then placed in a sunny window. Should the water evaporate too much, lukewarm water is to be added. Cuttings of such plants as Oleander, which are slow to root, are very successfully treated in this way. When the roots have been developed inside the phial to such a degree that they will not pass through its mouth, the phial is to be broken, and the cutting thus released may then be planted in soil.

Lastly, we have to consider leaf-cuttings without axillary buds. These are very seldom employed in room-culture, and chiefly in the propagation of Bryophyllum. The variegated Begonias may also be increased in this way, but in their case the adventitious buds do not spring from the edge of the leaf, but from the upper surface wherever the nerves have been cut through. A healthy, firm leaf is selected, and pegged down with small wooden hooks on the surface of a pot full of sand, the under-side of the leaf being next the sand. The principal nerves are then cut through vertically in several places, without injuring the body of the leaf. If now kept moderately moist in the room hotbed, buds will be produced from all the incisions in the nerves, which will be developed into young plants (like the buds on the margin of the leaf of Bryophyllum). These will send down roots into the sand, and, when well rooted, can be removed and planted separately in pots. We do not advise leaf-cuttings of Gloxinias and Gesneras to be tried in rooms, as they hardly ever form buds there sufficiently strong to outlive the winter.—*E. Regel.*

(To be continued.)

THE ART OF TABLE DECORATION.

It would appear, from what Mr. Harrison Weir has written (see p. 230), that table decoration ought to be restricted to artistic arrangements of cut flowers. If these be his views, I do not at all agree with him. Neither do I approve of either exhibitors or judges being fettered by any restrictions or limitations being placed upon the art of table decoration. As Mr. Fleming truly says, what is mainly wanted is variety, where the table is to be dressed frequently; and it would be very unwise for managers of flower shows to set themselves up as authorities respecting what is allowable and what is not in table decoration. The disadvantages under which exhibitors compete are already so great that it would be most undesirable to add to them.

Mr. Weir puts on record the fact that it is new to him to learn that dining tables are ever made with deal tops; this is equivalent to an admission that he is not practically acquainted with the details and workings of the art of table decoration generally; for he cannot have had any experience in fixing fountains and large blocks of ice in the centre of dining tables, or he would not have replied to Mr. Fleming's remarks (see p. 174) as he has done; he would have known that deal table-tops are in such cases almost always used. Mr. Weir may say that he does not think such things ought to be allowed; but many people admire such arrangements, and, like Mr. Weir, consider themselves good judges of a dinner table. I do not advocate them; but I do most strongly protest against their prohibition. Mr. Fleming, writing after long and constant practice, most properly remarks upon the impossibility of realising, at a flower show, "that perfection which a good house steward can effect, after a little consideration as to the number of lights, amount of fruit, sweets, &c." Mr. Weir considers these remarks "beside the question;" an observation from which I gather further proof of his non-acquaintance with the art of table decoration in its broadest views and in its practical workings. Mr. Fleming has hit the nail on the head when he says that "these all combine to make a whole that a competitor for a prize is deficient in."

Mr. Weir disagrees with me upon the question of the insertion of pots through the dinner-table; he considers it a step in the wrong direction, and the sooner it is put a stop to the better; he has travelled far and wide, and told everybody what he thinks, and neatly everybody agrees with him—at least Mr. Weir believes so. I take leave to doubt very much whether such would have been the case if

the "other side of the question" had been fairly set forth. But there is no need here to repeat all the advantages and beauties of pot-insertion in dinner-table decoration.

Mr. Weir writes that "the insertion of pots in tables is not art, or decoration in the true sense." When we acted together as judges at the Crystal Palace Show in July last, it was while we were discussing who should receive the third prize that he first made me acquainted with his views upon this matter, adding that he should disqualify every table through which pots were inserted. We had already awarded the first and second prizes, and I then pointed out to him that he had given the first prize to a table that had pots through it. Perhaps Mr. Weir will now explain how he came to crown with such high honours an exhibitor who perpetrated that which "was not art or decoration in the true sense?" When my friend found that the authorities would not allow "tables with holes in them" to be disqualified from competition, we proceeded with and finished our long morning's work without a difference of opinion of any importance. Whether he did or did not pass with his approval any more tables having inserted pots without finding out that this great impropriety had been committed, I cannot say. I simply report to all who may be interested in this matter, that out of the ten prizes then awarded, five of them were given to exhibitors who used Palms or Ferns in pots placed through their tables. Will Mr. Weir explain how he came to give half the prizes, amongst twenty-three competing tables, to persons who displayed that which was not "art or decoration in its true sense?" If Mr. Weir's theory is right, his judgment on this occasion must have been so far wrong. But if, as I believe was the case, the awards which he concurred in giving were right, his notion that plants put through a dinner-table can neither be artistic nor decorative, must be wrong.

WILLIAM THOMSON.

AN AMERICAN ON LONDON WINDOW AND ENGLISH COTTAGE GARDENS.

ONE of the most refreshing sights to an American arriving in London during the summer months is the wonderful diversity and beauty of the flowers cultivated in the windows and balconies of the houses. In some of the best streets hardly a house can be seen that is not so adorned, and even the most squalid abodes are often relieved by a miniature flower-garden on the window-sill. The most common style is the window-box, usually from 4 to 5 feet long and about 6 or 8 inches wide and deep. It is made of every conceivable pattern, of terra-cotta, cork, and rustic design in endless variety. The plants used are not very numerous in variety, being selected of kinds suited to keep in bloom or to sustain their brightness of foliage. Now and then the ribbon-like system is adopted on the balconies; one very handsome in this style was composed first of Moneywort, or Creeping Jenny (*Lysimachia nummularia*), which formed a drooping curtain of four feet in length; half-way down on it drooped blue Lobelia; then upon the Lobelia fell a bright yellow Steucrop; then against the Steucrop or Sedum, for the top-line or background, a dwarf zonal Geranium, a perfect blaze of scarlet. Hardly two of these window decorations were alike in the best streets, and varied from a simple box of Mignonette or Sweet Alyssum to cases filled with the rarest Ferns or Orchids. The effect as a whole is most pleasing, and one that cannot fail to strike the most indifferent observer as an agreeable change from the seemingly never-ending brick and stone of the city. The selection of plants, in some cases, is made regardless of expense, and in looking around the dining-halls of some of the best hotels, it is with some difficulty that you decide if you are not dining in the midst of a vast conservatory, so redolent is the air with the perfume of flowers. The same taste for window-gardening is displayed, more or less, in all the English towns and villages, and even the humblest thatched cottage of the peasant by the wayside is given a look of quiet happiness by the bower of flowers in the window. Here let me relate how the English cottager works his garden in some of the old towns, such as Colchester. To each cottage, renting for about 50 dollars per year (£10), is attached a garden of something more than an eighth part of an acre in extent. In this little spot the tenant contrives to grow from four to six kinds of vegetables, such as Potatoes, Cabbage, Peas, Turnips, &c., and of fruits, Goosberries, Currants, Raspberries, and Strawberries. Every foot is made to produce something, and rarely a weed was seen in some scores that we saw ranged side by side. The heavy work is done by the man of the house, "before or after hours," on his own time. In the weeding and hoeing he is assisted by wife or children. There is great rivalry among the different owners of these cottage gardens, and in many places liberal prizes are given by horticultural societies to those that are best cultivated.—PETER HENDERSON, in the *American Agriculturist*.

GARDEN DESTROYERS.

THE LACKEY MOTH.

(BOMBYX NEUSTRIA).

THE gay livery of the caterpillar of the *Bombyx neustria* (which has given rise to the colloquial name of Lackey moth, by which it is distinguished) and the beautiful bracelet of eggs laid by the moth would in themselves be sufficient to draw attention to this insect, but it unhappily forces itself on our notice by less attractive features. We see our fruit trees disfigured by webs tying the leaves and twigs together, forming a sort of slight filmy tent, under which multitudes of caterpillars shelter themselves living in society, rendering the trees unsightly and devouring the leaves, and thereby diminishing the vigour of the trees and spoiling the fruit. We search and we find that this is the culprit. A single gay coloured caterpillar seen by itself or examined under the microscope may be an attractive object, but when seen in scores writhing, twisting, twining, and crawling over each other, our inherent aversion to the snake tribe extends itself even to such a beautiful caterpillar; and when we know besides that it is really doing mischief, we need no apology for the severity of a sentence of extermination.

The eggs are represented in the annexed woodcut on the left hand surrounding a twig. They are elongate, narrower at the bottom than the top, and somewhat polygonal—shapes that are due not to the original form of the egg, which is like that of other eggs, before being laid, but to the position in which they are placed to each other, and to the twig on which they are deposited. The mother when laying her eggs must creep round and round the twig in a slightly spiral direction, depositing the eggs as close to each other as they will pack. From this peculiarity the moth is called in Germany the ringel-spinner. At first the eggs must be flexible, for it is obvious that they have yielded to the pressure of one another on each side and the exposed top has slightly fallen in. It depends of course upon the thickness of the twig and the number of the eggs how many rings there are, but they often reach as many as ten, and sometimes as many as fourteen. The number of eggs also varies, but as many as 400 have been counted. They are glued to the bark by a dirty brownish very firm substance, which here and there penetrates between, and is even smeared over the eggs, and binds them all together. It would be a boon if some ingenious discoverer could invent such a glue or cement, for the eggs adhere so firmly to the bark that they cannot be detached except by a knife or scraper of some kind. They resist the most intense cold, and it is necessary that they should, for they are exposed all winter, not being hatched until spring.

The caterpillar when full grown is about two inches in length. It is blackish, sparingly clothed with ferruginous hairs, with a longitudinal white stripe down the middle of the back, and on each side three orange stripes, of which the two upper are separated from each other by a black stripe, and from the lower one, which is above the stigmata, by a broader blue stripe. The head is bluish ash-coloured, with two black spots like eyes. The chrysalis is enclosed in a soft oval white silk cocoon, which is powdered with a yellowish dust, not unlike flowers of sulphur. The chrysalis is figured in the woodcut, but not the cocoon.

The perfect insect varies in colour, it being difficult to find two alike; but the variety does not extend very far. The ground colour is sometimes light fawn, sometimes ferruginous or tawny, and sometimes grey. The design consists of two whitish obliquely-transverse lines, as shown in the figures, which are all of the size of nature. In all the varieties the fringe is an interrupted white, the interruption being of the ground colour of the wings.

The eggs are hatched in spring, and as they have passed their unconscious period of incubation in company, so the young insects continue to spend their larval life in society too. The young things congregate together in the axis of the branches, close to the egg-shells which they have quitted, and soon begin to spin their common web. In fact, it would rather appear that the laying of the eggs in this bracelet fashion is an adaptation of a very simple process to the sub-

sequent necessity of the larvæ to live in common. The object of living in common is obviously to secure the advantage of a union of labour, so that they may, by their united efforts, provide a protection against the weather which each could not provide for itself individually. Why this species and its allies, which spin tents or bags in which to live, should require protection more than any other caterpillar we cannot tell; but accepting that as a condition of its existence, it is plain that all is arranged harmoniously for securing it. What it may be worth is another question. At first sight, looking at the thin texture of the web, one might be disposed to say that it could not be worth much, but we should probably err in coming to any such conclusion. Although very thin and very slight, it is continuous and supported by a network in many directions, and is all of silk, which is a non-conductor, and will keep in the heat that a large number of caterpillars congregated together give out, and the experiments on silkworms have shown that this heat is very considerable. It is too late to make the direct experiment this year, but we would suggest to those who have the opportunity next year to place the bulb of a thermometer in one of these nests and tell us what is the temperature within. If our supposition is right, it suggests another question, which applies to all the Bombyces or silkworms. Are we to look for their derivation to a warm climate or a cold? Should it be that, originally placed in a warm climate, a colder one has super-vened, to meet which the power of silk spinning, which all moths appear to possess in a greater or less degree, has been then more largely developed? Or have they been originally adapted to a cold climate, and furnished with suitable appliances and powers at once, and when found beyond the limits of such a climate, have their spinning inclinations been restricted to their cocoons and the tent-spinning dropped; or does it still continue? These are not the only questions which force themselves on our attention when we think of the instincts of this family; but we shall be told that we are digressing, and that all this is irrelevant. We bow to the reproof, and return to our larvæ. The caterpillars continue to live in society until they attain their full size, which is usually in the month of June. They then dissolve their partnership, and disperse over the branches, each taking care of itself alone, and without delay spin their cocoons among the leaves or in protected corners. They remain about a fortnight or so in the chrysalis state, and emerge as moths about the beginning of July. The coupling takes place immediately after, and by night, and the eggs are laid very shortly afterwards.

This species lives on every kind of fruit tree and also on many forest trees. It is very common over all Europe, not only in mid-Europe but in Sweden and Norway, and also in the south. The best mode of dealing with it is to cut off and burn the colonies as they appear. The webs which they spin are sufficient indication of their presence, and the garden shears can easily nip off all within reach. It has plenty of enemies—birds and parasites. Tauschenberg gives a list of more than a dozen of the latter, which, however, it is scarcely necessary to repeat here.

A. M.

THE FLOWER GARDEN.

HARDY PALMS AND SUB-TROPICAL GARDENING.

THE charming features which this comparatively new style of gardening has introduced into our garden scenery cannot be too highly appreciated. But the question suggests itself to those who have limited gardens and limited means—How can we maintain all our favourites? We must either discard one or the other. Mr. Robinson, in his "Sub-tropical Garden," has pointed out how many of the difficulties may be overcome by selecting and arranging the harder kinds of plants suitable to this style of planting, and by placing them in positions that will not interfere with the highly-dressed portions of the garden, so that all may enjoy a fair share of the beauties of every kind of planting. The high prices demanded for plants of suitable kinds of hardy and half-hardy Palms, Yuccas, Bamboos, &c., when grown to sizes sufficient to create immediate effect, no doubt deter many from sub-tropical planting.

I believe it is not generally known that in the forests of the Southern States of America are thousands of the hardy *Chamærops Palmetto*, *Yuccas*, and a species of yellow, thin-stemmed *Bamboo*, which form the undergrowth of the forests, as Ferns form the undergrowth of our English woodlands. *Chamærops Palmetto* and the other plants mentioned can be obtained there in every stage of growth, from seedlings sprouting through the ground to plants 10 feet high. Mr. Croucher, writing of *Chamærops Palmetto*, in *THE GARDEN*, of February 17, page 283, terms it, "a lax grower, and not very ornamental." If Mr. Croucher could see this Palm growing in its native wilds, he would reverse his opinion. I first met with it in the winter of 1870, when the water conduits of the streets in New Orleans were frozen two inches deep, and the lagoons in the vicinity of that city were covered with ice



Lackey Moth (*Bombyx neustria*).

half an inch in thickness. The numerous groups of Orange groves in the neighbourhood of New Orleans were all killed back to the old wood, and Banana plantations to the ground, yet the *Chamærops* were uninjured, and formed on the shores of the lagoons, intermingled with the plume-like foliage of the *Bamboo*, one of the finest winter pictures I have ever seen. Most of the Palms formed a perfect half globe, and were "feathered" to the ground. I am of opinion that this Palm would prove as hardy as *Chamærops excelsa* or *humilis*. The railway running from New Orleans to Brashear City, on the Gulf of Mexico, or rather at the head of Berwick's Bay, passes through large tracts of unopened forest, studded with Palms, Bamboos, and *Yuccas*. By this means of transit the plants I have mentioned could readily be placed on the wharfs at New Orleans, and thence, by the Liverpool and Mississippi steam navigation ships, brought home in twenty-one days. There are also the two lines of German steamers from New Orleans, one calling at Southampton and the other at Havre, by which plants could be brought to Europe. I mention these facts to show with what ease large quantities of the plants above mentioned, of such proportions as would produce an immediate effect, might be introduced into this country.

PETER WALLACE.

HOW TO WINTER DAHLIA ROOTS.

INDICATIONS of a rapid decay are spreading over trees and shrubs; therefore the wintering of tender plants has become a matter calling for speedy attention. Though up to this time there is scarcely the taint of frost to be seen on the leaves of the Dahlia, yet growers will soon have to turn their attention to keeping the roots through the winter. As long as the weather keeps mild, the roots are best in the soil, and need not be taken up till the end of November; but should sharp frosts be followed by heavy rain, their removal from the ground should be prompt. Some years ago, when the practice of Dahlia cultivation was less understood than it is now, it was the custom of some growers to take their roots up on a fine day, and carefully shake out every particle of the soil from the tubers. Several of the old florists, and possibly some of a more recent date, used to wash their roots very carefully, as some Potato exhibitors do their tubers in these days, and then dry them. Careful as they were, all their attention could not preserve the roots from decaying occasionally. Some would pack them in boxes with dry sand, some would place them in pits like Potatoes, kept covered with straw and mould, or strew them about an underground apartment, or sew them in a Russian mat and hang them in the coal cellar; or put them in dry mould, and stow them away under the potting bench; or hang them up on the walls of the kitchen, where they could neither rot from damp nor freeze from cold, but certainly would shrivel from the heat and dryness of the atmosphere. All these modes have been gradually abandoned in favour of a practice now generally followed by Dahlia cultivators, and which experience has proved to be the best of which they have any knowledge. A drying day is chosen for lifting the Dahlia roots, the stem of the plant is sawn or cut off to within 2 or 3 inches of the crown of the roots, and the roots placed on some sticks or boughs to dry, with the neck downwards, and so arranged that the air can pass underneath them. Some soil is allowed to adhere to the tubers, but the greater portion is removed by means of a pointed stick, which is about the best tool to remove it with. If the weather be fine and dry, the roots remain here for about three days, but are covered with a mat at night to screen them from frost. The floor of a greenhouse from which frost can be excluded or a dry cellar is a capital place wherein to stow the roots. A little ventilation is necessary to keep the roots from getting mouldy; and, on the other hand, a hot dry atmosphere must be avoided, in which the tubers might shrivel. By lifting the roots with some soil adhering to them, they are kept in plump condition during the winter, which is of great importance in cases where the roots are required for early forcing. On the floor of a greenhouse they will generally keep remarkably well, it being light and airy, and during the depth of winter there is not, as a general rule, much water given to the plants. In the case of those nurserymen who cultivate the Dahlia largely for purposes of sale it is customary to winter the roots in a close shed that is airy without being very light, and from which frosts can be excluded at will. Broad shelves form receptacles for stowing away the roots; and these are carefully looked over at intervals. The tubers of some sorts are more difficult of preservation than others, and it frequently happens that choice varieties are bad keepers.

AUTUMN TREATMENT OF VIOLETS.

ALL the earliest Violets should speedily be placed in their flowering quarters. Violets do not like forcing, neither do they need it if their crowns are ripened early and gently tempted by the protection of glass to open out genially and exhibit their fragrant blossoms. Violets look best and are handiest in small pots; five or at the most six-inch pots are large enough for the finest plants. Forty-eight-sized pots and sandy loam are the pots and the soil for Violets; and, supposing the plants to have been grown in rich earth in an open place in the garden, lift them with balls large enough to fill the pots. In such small pots there is little room for drainage; one piece of crock over the hole, or a small handful of burnt turf or Cocon-nut fibre refuse, will suffice. Pot the plants firmly; the Violet thrives best in a hard bed. Water to settle the roots and refresh the leaves, and give no more till the plants are dry. With such scant drainage, but little water will be needed till the roots possess and fill the pots with a matted network. Unless during frosts or very cold weather, keep the plants

as cool and hardy as possible. The mere shelter of glass will soon awaken growth and bring forth the blossoms from the fat crowns. The plants may be potted up in batches as they are wanted; or, better still, pot all that are needed now, and store the pots in cold pits; introduce them into the conservatory or sitting-room as they are required. The frame culture of Violets is just the same, only the pots are dispensed with. In the one case the plants can be brought into the sitting or drawing rooms for ladies to gather their own Violets, or enjoy them ungathered; in the other they must go to the frames to gather them, or have them brought in. Perhaps more flowers can be gathered from frames or pits of Violets with less labour than from the same number of plants in pots. Any rough stuff will do for the basis of the frame, if it is so far spent as not to produce a bottom heat of more than 50°. A cool bottom is a great point in the so-called forcing of Violets. The sun invites the flowers forth, but bottom heat sends forth a forest of leaves; therefore see that the bottom is moderately cool. Place the plants in a light sandy loam; they may be placed pretty closely together, as they do not occupy the frames permanently. On warm days remove the lights wholly; give air more or less at all times when the thermometer is above freezing point; let them be planted on a bank sloping sharply to the south. Thus they will meet every ray of the winter sun. Beware of damp; little or no water will be needed probably after the first settling of the earth around the plants. A good plan of growing Violets under frames is to grow them at first pretty close together in frame spaces; then no transplanting is needed. Towards the end of September merely place the frames over the plants, and they soon begin to flower. The art of growing early Violets in the open border is ideally the same in all the preliminary stages as their culture in pots or frames. Only choose warm places, at the foot of south walls, or in warm sheltered nooks with a sunny outlook anywhere, and fill these with young plants with fat crowns. The sun and the weather will do the rest; and often they do their work better than we do, with all our glass houses, frames, &c. The secret of plenty of flowers, in either house, frame, or the open ground, is to grow young plants every year with plump crowns. As to sorts, I still love the old ones best; the Neapolitan, the double Russian, and the single Russian. Add at least one modern one, the Czar, for his long stalk, which saves the trouble of mounting for bouquets.—*Field.*

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Saving Marigold Seeds.—Seeds of French and African Marigolds may be harvested some time before they are ripe. I had some excellent plants of French Marigolds of good form, and producing fine flowers, and being anxious to procure some seeds of them, on the approach of the late frosts I picked off several heads, but found none of the seeds ripe. I kept them, however, for a few days, and sowed some in a pot which I placed in a gentle heat, just by way of experiment, and to my surprise I have been rewarded with a numerous progeny of young Marigolds.—*W.*

Wintering Musas.—These are often plunged in the open ground in their pots, especially the smaller and more manageable sized plants. The larger ones are usually planted out. Now that they are lifted for the season, the smaller ones are stored away in houses, like other plants in pots, but the larger ones are lifted with comparatively small balls and placed on shelves in an intermediate house, where the temperature does not fall lower than 45°. Here they are laid on their sides, their leaves being kept rather closely together, and thus circumstanced they are allowed to remain throughout the winter, a mat being merely thrown over their roots. In February they are lifted; their roots are examined, and then they are planted in a sunk trench in one of the stoves or Palm-houses, where they soon form new roots and begin to grow afresh. In June, after being properly hardened by full exposure to air, their leaves are tied up, and the plants are lifted with as good balls as possible, and planted out in warm, sheltered places.—*W. F.*

Pyrethrum serotinum.—This is, perhaps, the grandest of all hardy late autumn-blooming perennials. It grows to the height of 3 or 4 feet, and blooms most profusely. The flowers measure from 2½ inches to 3 inches across, and are pure white with a yellow centre. Planted in patches at the back of herbaceous borders, in open spaces amongst dwarf shrubs, or in front of shrubby borders, it is extremely effective. As soon as its beauty is over, it should be cut down and the ground about the roots stirred up and mulched. By spring it will have formed a large tuft, which, if more plants are wanted, should be divided. The divisions or offsets require no special treatment beyond being set in rows in light rich soil, and planted out where they are to remain after they are large enough. This Feverfew may also be increased by means of seeds, but seeds seldom ripen in this country, as the plants flower late.

Stokesia cyanea.—Amongst herbaceous plants, few equal in beauty this magnificent late-flowering Aster. The flowers are blue, very large and showy, and are borne on the end of every branchlet, each bloom being about 3½ inches in diameter, and apparently semi-double. It blooms from September to the middle of October in early seasons, but in late ones during the whole of October. In its late-blooming property consists its chief value, for late-flowering, hardy, really good plants are scarce. It does best in a well-drained sandy soil, but any garden mould will suit it, if well drained and in a sunny situation. It is also very useful for conservatory decoration in autumn and winter. It may be readily increased by division in spring. The slips, after being taken off, should be put in in a warm border or frame, a few inches apart. As soon as they get well rooted and begin to grow afresh, they should be set further asunder, and a little river-sand and leaf-mould mixed with the soil. In August, some of the plants may be lifted and potted. If, however, large specimens are required, the largest plants ought to be lifted in July, and potted a second time before flowering.

THE LIBRARY.

THE VEGETABLE WORLD.*

THE difficulty of presenting the outlines of any natural science in a manner which shall be at once interesting and accurate, is one with which both authors and readers are only too familiar. In botany, for instance, we have many English text books by men of reputation, which are all that can be desired so far as accuracy is concerned, but which fail to attract the general reader, from a certain hardness, so to speak, in style, and an absence of anything like artistic beauty in the illustrations. In Professor Asa Gray's "Botany for Young People," the features of strict botanical truth and an interesting method of conveying information are combined more successfully than in any similar work with which we are acquainted; but such a happy combination is a rare exception to a rule which is only too

the faintest smattering of botanical science was their more striking characteristic. The present version, which has evidently been very carefully revised, is, so far as it goes, an admirable work, and the attractive illustrations with which it is literally crowded will do much to recommend it as a book of reference for the general reader. The work is divided into four parts:—Organography and Physiology; Classification of Plants; Systematic Arrangement of Plants; and Geographical Distribution; a good glossary of terms being added. The chief deviation from the original is to be found in the third part, where the editor has modified and altered M. Figuiet's plan so as to bring it into closer accordance with Lindley's "Vegetable Kingdom." Throughout the book, however, we have evidence of careful editorship in various little alterations which render it more suitable to the British botanist, and in additions which bring it up to the present state of botanical science. As an illustration of the style in which the work



Cedars of Lebanon.

general. The popular works of French botanists, on the other hand, exactly reverse the characteristics of those published in England, inasmuch as in them the illustrations are often in the best style of art, while the accompanying letter-press is not up to the mark. The readers of *THE GARDEN* have frequently had the opportunity of judging for themselves of the elegance and grace of their representations of plants, and the engraving which we are enabled to incorporate in the present notice will bear out our remarks on this point.

The present edition of the "Vegetable World" is, so far as botanical value is concerned, the best which has appeared, not excepting the original French issue. It is the more acceptable on account of the absurd mistranslations and ridiculous errors which disfigured almost every page of the first English edition—errors so glaring that it was impossible to decide whether ignorance of the French language or of

is written, we take the following passage, with its accompanying engraving:—

The Cedars (*Cedrus*) are distinguished from the Larches by their leaves being persistent during several years after the elongation of the bud, and by the scales of the cone being more closely imbricated. The Cedars of Lebanon are trees having an aspect full of grandeur, spreading their vast horizontal arms 30 feet or 40 feet from the stem, which rises 40 feet or 50 feet above the soil. Upon the back of Mount Atlas, in the north of Africa, and in the temperate countries of Asia, the Cedar forms immense forests of a most majestic and imposing aspect. There is, indeed, no nobler object than the Cedar. "The Lebanon," say the Arabian poets, "hears winter on his head, spring on his shoulders, and autumn in his bosom, while summer sleeps at his feet;" and in confirmation of the truth of the sentiment a few venerable Cedars still remain; they form a beautiful grove on the line of route from Baalbec to the coast. They are large and massy, rearing their heads to an enormous height, and spreading their branches afar; but they have a strangely wild aspect, as if wrestling with some invisible person bent on their destruction, while life is still strong in them; but

* The Vegetable World: being a History of Plants, with their structure and peculiar properties. Adapted from the work of Louis Figuiet. New and revised edition, with 473 illustrations. Cassell, Petter, and Galpin.—London, Paris, and New York.

they are gradually disappearing. The grove near the Kadisha has been described by every traveller. In 1575, of the largest trees there were twenty-four, standing in a circle; in 1630, Fermail counted twenty-two; there are now seven standing near each other, and a few more almost in a line with them. According to Tristram, the Cedar is also to be found scattered through the northern and inaccessible parts of the Lebanon.

The geographical portion is very well worked out, considering the brief space at the author's disposal, and has many interesting extracts, such as the following from Professor Martin's account of the vegetation of Hammerfest, under 70° 48' N. latitude.

The houses of the poorer classes . . . borrow a particular charm from the flowery turf with which they are covered. The roofs are formed of great squares of turf, on which a number of plants have germinated and grow vigorously. In seeing these aerial gardens I have for the first time been able to comprehend the phrase "*in tectis*" [*tectis*] which often occurs in the writings of Linnaeus, indicative of the locality. In short, it was upon the roofs of houses that the learned botanist of Upsal herborised at Hammerfest; indeed, I frequently borrowed a ladder myself from the proprietor, in order to gather the plants which grew round the chimney of one of these picturesque old houses. What I often found there were *Cochlearia anglica*, *Lychnis diurna*, *Chrysanthemum inodorum*, Shepherd's Purse, *Poa pratensis*, and *P. trivialis*. In autumn, when the flowers of *Chrysanthemum inodorum* are in full bloom, these hanging meadows rival in beauty those of our own more genial climate, and give the smiling city a physiognomy which contrasts most happily with the severe aspect of surrounding Nature.

Space will not admit of our quoting from the physiological or systematic portions of the work, both of which are trustworthy and admirably illustrated. A few trifling inaccuracies occur, as in fig. 411, which is lettered *Erica cinerea* and indexed as *E. carnea*, and scarcely represents either species; *Trigonella ornithopodioides* (p. 106) should probably be *Lotus corniculatus*; but as a whole, the work is singularly free from misprint or errors of any description. The annexed illustration is one of the Stone Pine (*Pinus pinea*) and is a beautiful specimen of wood engraving.

ON GARDENING.

SITTING at my open window, this morning, and watching one of the steadiest downfalls of rain which we have had all through the season, I think of the disarrangement of certain little plans which I had formed for the day; but I console myself with the reflection that the earth has been very thirsty for some time, and that last night I had been talking of watering my garden. The hay has been gathered in and stacked in the fields opposite to me, and the corn is not yet ripe for the sickle. So I may be permitted, without selfishness, to think of my garden. There is nothing, perhaps, reconciles us to all atmospherical conditions so much as gardening. Whatever the weather may be, it is sure to be favourable to some of our possessions. If the sun does not shine to ripen the fruit, the rain falls to revive the flowers and to develop the root-crop. There is something to be thankful for in every change. We do not come to understand this all at once. There are some things, indeed, rather hard to understand; and one of these is the great fact that whether it be fair or whether it be foul, it is all for the best. But if we only wait a little, and possess ourselves in patience, we shall soon come to appreciate the beneficent operations of Nature. Inexperience thinks that everything is going wrong, when in reality everything is going right. I took a house and entered on possession in the month of May, with a great expectation of a fine crop of Roses. But there was not a bud on any one tree—whereas in the garden of the house I was vacating, every tree and every bush was in full blossom. I made up my mind that I should not see a Rose, and had in thought condemned the worn-out trees to speedy extirpation. But although they put in a somewhat late appearance, it was a highly creditable one. A cold spring and late frosts had kept them back, being in a more exposed position, and they had almost entirely escaped the grub of the earlier season. So it turned out that what I had thought was all against me was all in my favour; and thus I learnt that it is wise always to wait.

LARGE AND SMALL GARDENS.

There is a great deal more to be learnt from gardening; but I am about to discourse not so much of its lessons as of its delights. And when I speak of gardens, I must not be supposed to refer in any way to those of the grand Baconian type, whereof the great essayist has written with as much fine taste as common sense—"Gardens," as he says, speaking of those which are, indeed, prince-like, "the contents of which ought not well to be under thirty acres of ground, and to be divided into three parts—a green in the entrance, a heath or desert in the going-forth, and the main garden in the midst, besides alleys on both sides,"—such gardens, public or private, as those of Kew, Chatsworth, Stowe, and the like—but to such modest domains as men of slender income may cultivate, and in which they may take a personal interest—nay, even cottage gardens, such as labouring-men tend lovingly before and after the day's work by which

they live. I have seldom read anything in which I more heartily concurred than in this, which I find in the Introductory Epistle to Cowley's poem of "The Garden." It is written "to John Evelyn, Esq." "I never had any other desire so strong and so like to civetousness as that one which I have had always, that I might be master at least of a small house and large garden, with very moderate conveniences joined to them, and there dedicate the remainder of my life to the culture of them and the study of nature." In these days of increasing population and extending cities, it is the necessity—and in some instances, perhaps, the ambition—of men to have large houses and small gardens. How many wealthy people build, purchase, or hire, in the beautiful suburbs of London, spacious mansions, with all modern appliances and conveniences, splendidly decorated, papered and gilded in the most costly fashion, but with scarcely a rood of ground around them. The immense value, for building purposes, of land near London, and in a lesser degree, near all large and increasing cities and towns, render this an inevitable condition of suburban residence. You may sometimes see "a small house and large garden" among a number of pretentious, landless villas; but you may be sure that the house, with these blessed conditions, is the oldest in the place, that it is held under a long lease, and that so soon as the lease shall fall in, it will be doomed to utter extinction. Half-a-dozen villas, four stories high, will be erected on the two acres of garden ground. The small partitions thus created will be highly cultivated. There will be a number of pretty parterres, but not "a small house and a large garden" in the place. Of course, I do not forget that this applies only to dwellers in the neighbourhood of cities. There are those who, "remote from towns," "run their godly" (or goddess) "race"—people in the agricultural or huclic state of existence—and there are our excellent parish priests, who, for the most part, are hearty gardeners. I have seldom seen prettier gardens, or gardens in a better state of cultivation, than those which surround our parsonage-houses. Labour is cheaper in the rural districts, and your parish priest, conscientious though he may be, has leisure time on his hands to superintend, and, if he be in the vigour of his years, to work in, his garden-grounds. "Please, sir, master is working in the garden," used to be, and still is, a common answer to the inquiry whether Mr. Primrose is at home. Perhaps the divine has a stout son or two to aid him, and wife and daughters to do the gentler and more tasteful part of the work. I have seen many a pretty sight of this kind, especially in the "sweet shire of Devon;" and in my younger days I have struck in to help to water the Peas or to hoe the Potatoes. I have heard men say that they do not care to eat birds which they have killed or fish which they have caught themselves: they despise shooting or angling "for the pot." But gardening for the pot is no such bad thing. If it does nothing else, it gives you an appetite to eat the produce of the soil; and, for my own part, I must confess that I have never found any fruit or vegetables obtained from a neighbouring greengrocer, or bought in Covent Garden, half so enjoyable as those which I have reared and picked myself. I at least have full assurance of the freshness of them.

GARDENING AMONGST THE MIDDLE AND LOWER CLASSES.

It is one of the pleasantest signs of the times, that the love of horticulture is so notably increasing amongst us, especially in the middle and lower classes of society. I have heard men lament that the intrusion of the builder has marred the fair face of nature in some of the loveliest parts of the country; and again, that the railway is an enemy to the picturesque. But there is much to be said on the other side. It is, doubtless, pleasant at times to come upon vast stretches of heath or woodland, without a sign of human habitation. But too much of this becomes wearisome; and one soon rejoices in signs of the living man. There are many places which, as I remember them in my youth, were beautiful wildernesses, but which are now a constant succession of beautiful parterres. I surveyed, as an Addiscombe cadet, the ground on which the Crystal Palace and the vast assemblage of houses, down to the great Nerwood Cemetery, now stand. There were woods and gipsies in those days. And to stumble upon a house was an event. There is, perhaps, no place, within an equal distance of London, in which the value of land for building purposes is at the present time so high, in which the gardens are so small, and, it may be said, so poorly cultivated. The one great palatial garden on the hill, which makes even Bacon's idea of a garden a diminutive conception, suffices for all the inhabitants of the neighbourhood. Residents in the immediate vicinity say that they have one of the finest gardens in the world open to them, and why should they care about their Lilliputian plots of ground? It is difficult to answer this, except by saying that one likes to have a Rose or Cabbage of one's own. But in places more remote from such a regal garden, smaller ones, according to the middle-class standard, are springing up everywhere. In Epping Forest, where I roamed in my earliest youth; about Wandsworth and Wimbledon and Richmond, with which I was familiar, in my "salad age," what changes have I not seen. I have come suddenly upon pretty, flower-girt villas, at well-known turns of the road, the sight of which, I must say, has not been distasteful to me. I need not add that I protest against over-much enclosure. The lungs of London must not be clogged with brick and mortar. But there is plenty of open space yet: and it is not always a painful surprise to come upon a pretty creeper-grown cottage, or "villa" (as we now call the modest homes of our suburban residents) with a blaze of scarlet and yellow flowers about it, standing out from the dark background.* These well-ordered little gardens commonly show signs of womanly care. Indeed, you will rarely pass them without seeing maid or matron at work, with basket and scissors in hand. And there is something more

* "A rural scene to me is never perfect without the addition of some kind of building." SHENSTONE: *Unconnected Thoughts on Gardening*.

pleasantly suggestive in the sight than in dark woods and barren commons.

We owe not only these buildings, but the style of these buildings, to the railroad. The occupants of these pretty flower-girt villas, but for the blessing of our present facility of locomotion, would be living in some long dingy street in the cheaper quarters of the metropolis. But this is not all that the rail has done for us. It has rubbed off much of our reserve, our exclusiveness, our dislike of being seen by our neighbours. When I was a boy, the care of every man living a little way "out of town," was to encase himself in heavy brick walls, shutting out the road, so that he could neither see nor be seen. Whatever beauty there might be in his garden-grounds he kept it scrupulously to himself. He drove himself to town in a "gig," or went, with the same fellow-travellers, in a six-inside coach, and seldom saw any new faces. The very notion of his wife or daughter travelling in a public vehicle would have been an offence and an abomination to him. But now we all travel in public. We ventilate ourselves on the railway platform. We eat and drink gregariously at the railway buffet. We do not care who sees us. And so when we go to our suburban homes, we are no longer afraid of being seen by the passer-by; and instead of a high brick wall we have an open iron-railing before our gardens. And thus the beauty of our flowers benefits others than ourselves. And it is no shame for man, maid, or matron to be seen gardening. "No shame!" Is it not a glory thus to tread in the paths of the common parents of mankind—"the gardener Adam and his wife"—ere sin and sorrow entered the world? It is almost impossible to associate anything low or vile with the thought of flowers—

Flowers are lovely; love is flowerlike, Friendship is a sheltering tree; and though we may not always be right in the supposition that where there is a well-cultivated garden there is a well-ordered home, I doubt whether we should be often wrong in the surmise. I look down, twice a day, from the railroad upon the backs of a number of small suburban dwellings, occupied presumably by a better class of artizans, with narrow strips of garden-ground in the rear; and I see that some are bright with flowers, whilst others (I am glad to say the minority) have not a patch of colour in them, but present simply an area of dirt. Among the flowers I see cleanly, healthy-looking women and children, and at evening-tide the good man happy and robust; but on the bare spaces slatternly women doing nothing, and unwholesome men sulkily smoking their pipes at the door. It would be unreasonable and intolerant to deny that there are many excellent men without any love of gardens or gardening. Dr. Johnson confessed that he "hated to hear about prospects and views, and laying out grounds, and taste in gardening." "Sir, let us take a walk down Fleet Street." He spoke scornfully of poor Shenstone and the Leasowes—or, rather, of Shenstone for having spent so much time and so much money on the Leasowes; for he admitted that the poet "made his little domain the envy of the great and the admiration of the skilful, a place to be visited by travellers and copied by designers." We can feel no surprise that Johnson was of this mind with respect to gardens and gardening. Indeed, it would have been surprising if it had been otherwise. He liked Mrs. Thrale's tea at Streatham better than Mrs. Thrale's garden.

ESPECIAL ADVANTAGES OF GARDENING.

There is one especial advantage in a taste for horticulture, that

Age cannot wither it, nor custom stale Its infinite variety.

As we grow old it commonly happens that the pursuits of our youth

lose their charm. We may grow tired of them, or physical infirmity may render us incapable of enjoying them. We cannot play at cricket, we cannot pull an oar on the river, we cannot ride to hounds as we did in our prime. We have reached a stage of "old-fogysm" and whist. But the garden never wearies us. It is a "good old gentlemanly" pursuit; as long as we can see or smell, it must delight us. And it can never do us any harm, physical or moral, unless we allow our love of it to lead us into expenditure beyond our means. And oh! the good that it does! How it cheers, how it invigorates—nay, how it purifies. Truly has it been written—

In nature there is nothing melancholy.

The mere sight of trees and flowers and lawns acts as a perpetual tonic. It is dreary work to rise in the morning and to see nothing from one's windows but a vast monotony of dingy brown brick. There is nothing, to my mind, in such a sight to lighten one's troubles or to strengthen one for the strifes and struggles of the coming day. It must be admitted, however, that there are those who have thought and said otherwise. "A man must have a rare recipe for melancholy who can be dull in Fleet Street," wrote dear, genial, kindly-hearted Charles Lamb. "I am naturally inclined to hypochondria, but in London it vanishes like all other ills." He confessed to an "almost insurmountable aversion from solitude and rural scenes."*

I have such an affection for Elia, that there are few points on which I would not say, *Errare malo cum Carolagnò quam cum altis recte sentire.* But this is one on which I can express no sympathy; I have no love of absolute solitude, I should like always to have—

A friend in my retreat, Whom I can whisper, "Solitude is sweet."

I like to look across my garden, and to see people of all sorts and conditions going about their daily work or their daily pleasure. The labouring man with his scythe, the milkman with his cans, the "sweet girl graduate," with her portfolio under her arm; the rosy, elastic-limbed boy, with his cricket-bat over his shoulder; the stalwart equestrian, taking the crisp morning air before he betakes himself to the serious business of the day; the little family-party bound for the railway, catalogues in hand, to visit the International or the Academy; the mother and child perched on the top of a timber-laden cart, getting a country ride for nothing,—all these have their several charms for me; and I doubt whether I should enjoy the rural delights of my trees, my flowers, and my green lawns, as I now enjoy them, if it were not for this background of humanity. I was born in London; I am a Cockney of Cockneys.† But I have wandered far afield. I have dwelt in three quarters of the globe; and I have



Stone Pines.

* I should like to believe that this was written in a purely dramatic sense (it is in a little sketch headed "The Londoner"), but, although there is obviously some fiction in it (for the writer says that he was born on Lord Mayor's Day, whereas Charles Lamb was born in February), the sentiments expressed are undeniably his own. There is very little mention of rural pleasures in any of his writings; but there is often an unconscious recognition in his metaphors of those floral beatitudes which it is given to all more or less to enjoy. For example, he writes of Edward VI. as "the young flower that was untimely cropt as it began to fill our land with its early odours."

† It is natural that these early metropolitan associations, if not broken by distant peregrinations in after-years, should induce a deeply-rooted love of cities. I believe that there are some whom nothing can reconcile to anything countryfied. My dear friend G—S— told me a charming story of a City warehouseman, who, after long years, was at last induced by his master to take a holiday on Hampstead Heath. Next day, he was asked what he thought of it—whether he had enjoyed himself. He did not think much of it, he said; he couldn't say that he had much enjoyed himself. He thought the horses better than the hills—the pavement better than the gorse. At last, in despair, his master, asked him if, at least, he did not like the fresh air. "Well, sir," he answered, "I thought it rather thin."

learnt to associate the delights of fields and flowers with moving pictures of humanity. Indeed, I do not know any genuine lover of nature, who is not a genuine lover of humanity; who does not see in a rosy-cheeked, bright-eyed child,—

The sweetest thing that ever grew
Beside a cottage-door.

—*Cornhill Magazine.*

(To be continued.)

THE KITCHEN GARDEN.

THE POTATO DISEASE.

BY WORTHINGTON G. SMITH, F.L.S.

The stormy weather, and warm humid air of the present season, have been peculiarly favourable to all fungoid growths; therefore, as might have been expected, the Potato disease has been more than ever prevalent and destructive. Accounts reach us on all sides of the serious failure, or even total destruction of the Potato crops from the ravages of this insidious pest. How and when it was first observed, what it is, and how to extirpate it, are the three very serious questions which have occupied attention for nearly thirty years. The two first questions can now be pretty satisfactorily answered; but as for the third, it is an enigma which has at present baffled every attempt at solution. A brief summary of what is known of the Potato disease, therefore, with a new series of illustrations, drawn to a uniform scale, cannot fail to be of interest; and in writing this summary, and engraving these illustrations, I am bound at once to disclaim all originality, and to say that for nearly all the facts known respecting the Potato disease we are in the main indebted to the careful and accurate observations of the Rev. M. J. Berkeley.

The autumn of 1845 will be ever memorable as marking the great outburst of the Potato murrain over the whole of Western Europe and the northern parts of the United States of America; the disease had, however, been very had the previous year in America, and was even observed in Europe, and reported upon in that year by Desmazières, who read a paper upon it at Lille. Even in 1841 Dr. Morren detected it in Belgium, and then and there published a notice of the fungus, and some suggestions for contending against it, such as immediately removing the diseased haulm, &c. But even so far back as 1830 a disease of Potatoes was observed in Germany, and called the "dry rot;" and it is very probable that the first detection of the Potato disease dates back for nearly a century. One year before its virulence reached its height in this country, viz., 1844, it occurred in its worst form in Canada, and a letter addressed to Dr. Bellingham in that year, and published in *Saunders's News Letter*, gives a graphic account of its ravages. The letter says:—"During the mouths of July and August we had repeated and heavy showers, with oppressive heat, and an atmosphere strongly charged with electricity. Towards the close of the month of August I observed the leaves to be marked with black spots, as if ink had been sprinkled over them. They began to wither, emitting a peculiarly offensive odour; and before a fortnight, the field, which had been singularly luxuriant, and almost rank, became arid and dried up, as if by a severe frost. I had the Potatoes dug out during the month of September, when about two-thirds were either positively rotten, partially decayed, and swarming with worms, or spotted with brownish-coloured patches, resembling flesh that had been frost-bitten. These parts were soft to the touch, and upon the decayed Potatoes I observed a whitish substance like mould." From careful consideration of the earliest recorded cases of this disease, there can be little doubt of its American origin, or indeed from its dating back from a very early period. A superficial thinker might be inclined to fall back upon the theory of "spontaneous generation," and so account for the origin of the Potato fungus, about 1840; but although *Peronospora infestans* belongs to a genus numbering some forty species, all more or less alike, and all parasitic upon living plants, yet the specific characters of *P. infestans* appear so distinct (such as in the peculiar swellings on the thread-like stems, &c.), that no observer of natural objects accustomed to distinguish one thing from another could for a moment think of considering *P. infestans* as a mere form of some immediate ally. Its real origin, like the origin of all plants, animals, diseases, &c., probably dates into the far past, and is likely to be ever involved in obscurity. The fungus which produces the Potato disease is by no means confined to Potatoes, but attacks other members of the family to which the Potato belongs; for instance, it is very common on the fruit of the Tomato, and has been detected on the common woody Nightshade, or Bitter-sweet of our hedges (*Solanum Dulcamara*); it even does not confine itself to the family to which the Potato belongs (*Solanaceæ*), but has been found upon *Anthrocercis viscosa*, a member of the *Scrophulariaceæ*; therefore, in searching into the "origin" of *Peronospora infestans*, we not only have to look to the beginning of the Potato disease itself, but to the

diseases of such plants as the woody Nightshade and Tomato. Little was known of the disease as affecting Potatoes in this country till July, 1845, when it ravaged the south of England, the first printed record of its alarming advent appearing in a letter from Dr. Salter, in the *Gardeners' Chronicle* for August 16. So rapid and devastating now was its progress in this country, that Mr. Berkeley states few sound Potatoes were to be found in Covent Garden market a fortnight after its first recorded appearance, and though at this time it had not reached the Midland Counties, yet in a few days it was general. At the beginning of September it was recorded from Ireland, and a few days afterwards from Scotland, at which time the full power of the Potato murrain was expending itself upon the British isles. About this period (as now) all the papers, grave or gay, had something to say about it, and the Potato disease was even one of the stock subjects reserved to joke about in the Christmas pantomimes. On one stage a gigantic tuber was brought on surmounted by an equally gigantic aphid, a joking allusion being at the same time made to the *Aphis vast-tater*. So serious, indeed,

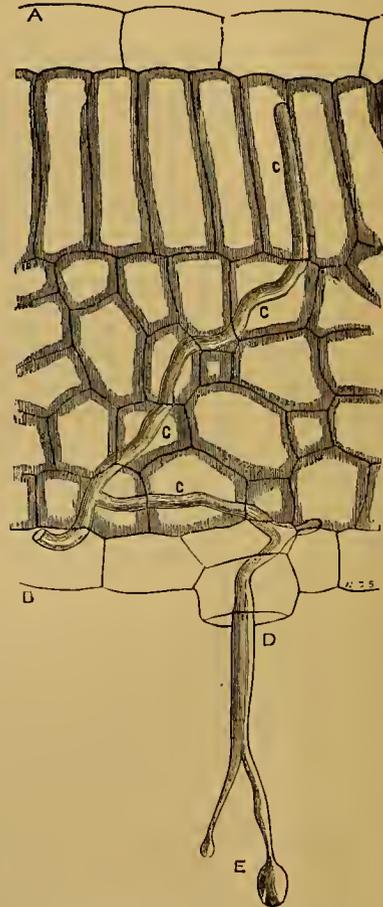


Fig. 1. *Peronospora infestans*. Five days' growth from a spore, enlarged 400 diameters.

was the state of things at this period, that three of the Governments of Europe issued commissions to examine into the cause of the murrain, and discover, if possible, the remedy. It has frequently been remarked, that just before a bad attack of the disease the leaves and stems of the Potato become of a darker green and appear more than usually luxuriant, as stated in the letter addressed to Dr. Bellingham already quoted. This has been accounted for from the fact that the mycelium of fungi is a great incentive to the production of the green colouring matter of leaves; we may, therefore, safely assume that this appearance is put on immediately after the germination of the spores upon the foliage and stems. So rapid is the growth of this parasite, that in four or five days after this germination the tissues of the leaves become traversed in every direction by the mycelial threads, and the fruit-bearing branches are protruded through the breathing-pores on the under side of the leaves, as shown in Fig. 1. The parasite never appears on the upper surface, which is impervious to its attacks; but in perfecting itself, and producing its abundant fruit, it totally

destroys the matrix on which it grows, and causes the leaves to putrefy and dry up. Perfect specimens are seldom met with on Potato stems; but the destructive mycelial threads descend them, and so reach the tuber. The stem now, like the leaves, rapidly rots, and falls upon the earth an offensive mass. So rapid and fatal is the growth of this fungus, that in a few days it will spread from plant to plant over a large tract, and in less than a week turn every stem and leaf in the field to one rotten mass. Within these diseased stems are often found black masses of hardened threads, which are believed to be the mycelial filaments, in a resting and highly condensed but still living state; these black threads have been described under the name of *Sclerotium varium*. Another form of this substance, very common just under the bark of old trees, has been described under the name of *Rhizomorpha*; this is probably the mycelium of some *Polyporus* in a high state of condensation. Returning to the young condition of the Potato fungus, we see it five days old in fig. 1, where the distance from A to B shows the thickness of the Potato-leaf itself, magnified 400 diameters: A is the upper surface of the leaf, and B the lower. The mycelial threads or spawn (C), may be seen ramifying amongst the cellular tissue of the leaf, whilst the



Fig. 2. *Peronospora infestans*, enlarged 150 diameters.

fertile thread is shown emerging through a breathing-pore, or stomate (D), and branching and bearing (at present) immature spores at E.

It is almost impossible to conceive of anything which could have a more damaging effect upon a plant than such a growth as this; for, leaving out the destructive nature of the mycelium within the leaf, the whole of the leaves' mouths, or breathing-pores, soon become completely choked up. Fig. 2 represents the mature condition of the fungus enlarged to 150 diameters only; here the characteristic swellings on the branched threads are shown, the stems bearing an abundance of spores (which are analogous with seeds and reproduce the parent) on their apices; the threads, as in the last figure, are seen emerging through a breathing-pore on the lower surface (here inverted, better to display the character of the fungus).

It is easy to see from this figure the damaging effect the fungus must have upon the plant: the fungus stems protrude from its mouths, and prevent the emission of perspiration; the Potato-plant thus gets surcharged with moisture, which rots the stems and leaves, whilst the mycelium preys upon the tissues.

When the mature spores (G, fig. 3) fall from their apices, they readily germinate, as at H, H, by rupturing their outer coat, and discharging their contents: these contents immediately take the form of confluent mycelial threads, and produce the characteristic brown colour in the cellulose. The spores in this figure are enlarged 400 diameters, or to the same scale as fig. 1. In fig. 1, however, it must be remembered that the spores represented are immature. In the perfect condition of the Potato fungus, certain

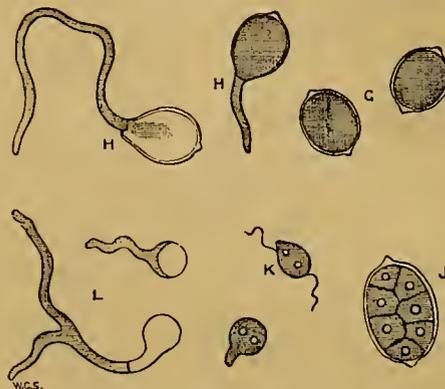


Fig. 3. *Peronospora infestans*, spores and zoospores, enlarged 400 diameters.

privileged spores acquire greater dimensions than others, as shown at J, fig. 3; the contents of these privileged spores become differentiated, and produce within themselves a number of distinct nucleated cells, which at length are set free in the form of active zoospores, each zoospore being furnished with two thread-like processes (K), with which, when in fluid, they are enabled to move rapidly about. These bodies germinate exactly in the same way as the ordinary spores, by discharging their contents through the ruptured outer coat (L), and must play a very important part in the economy of the plant, for it is manifest that although they cannot move unless immersed in fluid, yet it can easily be imagined that during rainy weather, or after heavy dews, and when the leaves of Potato-plants are all wet and blown against each other by the wind, a few zoospores

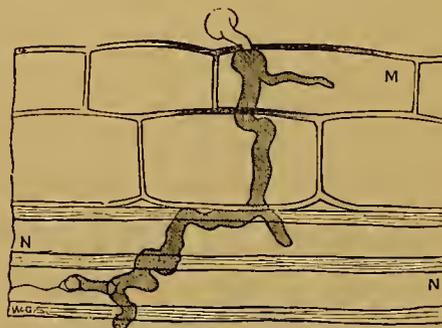


Fig. 4. *Peronospora infestans*, spore germinating, enlarged 400 diameters.

originating from two or three infected plants, would speedily contaminate a large field of Potatoes: then, when we remember the hundreds of thousands of ripe ordinary spores blown about everywhere by the wind, their rapid germination, and immediate reproduction of other ripe spores and new zoospores, the rapid and fatal spread of the murrain remains no longer a mystery.

Fig. 4 shows a section through the stalk of a Potato-plant, with a single mature spore germinating upon the surface, its mycelium penetrating the epidermis (M) and cortical layer (N N).

Now, not only is *Peronospora infestans* able to reproduce itself from its spores and zoospores, but amongst the mycelium in the intercellular passages of spent Potatoes are found other bodies which there grow and fructify. These bodies, discovered by Dr. Payer, though referred by Montagne to the *Sepedonicii* (the order next in succession to *Mucedines*, to which latter order the genus *Peronospora* belongs), are considered by Berkeley and others to be probably a secondary form of fruit (oospores) of the Potato fungus itself. These bodies, named by Montagne *Artotrogus hydno-sporus*, are shown in Fig. 5 magnified 400 diameters; the young *Artotrogus* being shown at O in its mother cell (with threads), and at P free.

These bodies make the study of the Potato disease more complicated, and its ultimate eradication far more difficult; for they do not germinate at once (as do the spores and zoospores), or perish, but remain quiescent for a whole season, till certain favourable external conditions cause them to burst from their sleep and reproduce the parent. Resting spores and dormant sclerotoid tuberiform bodies are very common amongst fungi, a very remarkable instance being found amongst the Agaracini. In *Agaricus tuberosus*, we have an agaric springing from a tuberiform base, which is invariably found

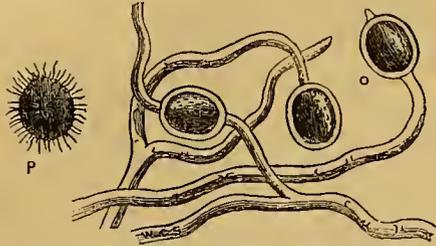


Fig. 5. *Artrotrogus hydnosporus*, enlarged 400 diameters.

growing from the dead remains of the previous year's fungi, generally the *Russulæ*; but we have found the sclerotia at the bottom of the tubes of some of the *Polyporei*, the perfect agarics emerging through the tubes.

Closely allied to the Potato fungus is another species found infecting Chickweed (*Stellaria media*), and named by Casparry *Peronospora alsinearum*. In this species, and some others of the genus, male organs, or antheridia, have been detected, as shown at Q, Fig. 6, where the mycelial filaments are shown bearing the oogone, with which the mature antheridium is shown in contact: the contents of these cells are interchanged, and thus an oospore or resting spore

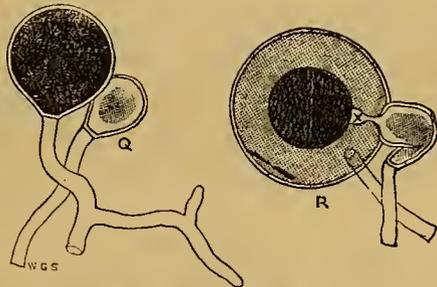


Fig. 6. *Peronospora alsinearum*, enlarged 400 diameters.

is produced. At R is shown a section with the inflated summit of the fecundating tube of the antheridium (X) touching the gonosphere; this latter has a neat outline, produced by the membrane of cellulose which has just been secreted.

At Fig. 7 (S) is shown a ripe oospore, furnished with its thick reticulated episore, the surrounding protoplasm having almost disappeared; and at T a ripe oospore, whose episore has been detached by maceration in water; a thick, colourless endospore remaining, composed of two thick layers containing protoplasm, with two unequal vacuities. The fecundating tube may be seen still fixed

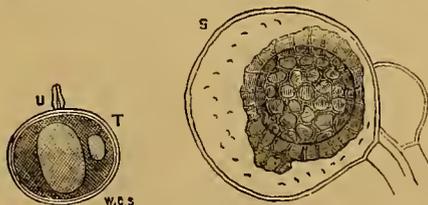


Fig. 7. *Peronospora alsinearum*, enlarged 400 diameters.

in the endospore at U. These oospores, or resting spores, of the Chickweed parasite, like those of the Potato, possess the singular property of remaining dormant during the winter, and germinating (under favourable circumstances) during the following season.

We have now glanced at the fungus and its effect upon the foliage and stem; but we are all of necessity most interested in its fatal effects upon the Potato itself. In the vast majority of instances the fungus makes its first wholesale attack upon the leaves, sending its destructive mycelial threads down the leaf-stalks into the stem, and thence, and lastly, into the Potato itself. If this takes place

when the Potato-plants are young, growth is at once arrested; but if the plants are well established, the tubers are found to be discoloured. This is undoubtedly caused by the presence of the fungus beneath the cuticle of the Potato; for if the Potatoes are taken up and kept in a damp air for a day or so, the perfect parasite presents itself upon the surface. From the exterior of the Potato the fungus penetrates to the interior, decomposing the tissues, and making the tuber a suitable nidus for various other fungi, which are not long in making their appearance. With the decomposition comes the disgusting odour so well known in connection with diseased Potatoes: the diseased tuber is now attacked by insects, and its end is one horrible foetid mass. It generally happens that the eyes are the last to succumb to the disease; and it is stated, that if they are cut out and planted, they grow into healthy plants; but if the fact is taken into consideration of the resting spores being produced within the intercellular passages of spent Potatoes, and that these resting spores are capable of lying dormant during a whole season, it seems reasonable to imagine that the planting of such eyes would be the one certain means of spreading the disease.

That the fungus attacks apparently healthy plants there can be no manner of doubt, the prevailing opinion now being that it is by no means necessary that a plant should be in ill health for a fungus to find therein a suitable nidus. Contrary opinions have, however, long been held, and are still held on this point, many observers thinking that excessive moisture, over-cultivation (if such a thing be possible), electrical influences, or attacks of insects, first affect the health of the plant, and predispose it to succumb before the attacks of the fungus. Mr. Alfred Smee, surgeon to the Bank of England, has long held his ground upon the hypothesis that the Potato is first attacked by an aphid, and so rendered a ready prey to the *Peronospora*, and says from his own observations he believes that an aphid invariably punctures the leaves before an attack of the fungus: he holds the same views with respect to the *Ascomyces* of the Peach; but Berkeley and others nail their colours to the fungus, the whole fungus, and nothing but the fungus,—and not without sufficient grounds; for, amongst other reasons, the immediate allies of the Potato fungus do not prey upon decaying matter; other species of fungi do, but these do not.

Whilst it is comparatively easy to say when and where the Potato murrain was first brought prominently into notice, and what the Potato disease is, it is by no means an easy matter to suggest an effectual antidote to its ravages. Dr. Hooker has recently published in the daily papers a plan devised by Professor Henslow for preserving the nutritive portions of diseased Potatoes; but from its tedious nature, it is never likely to be carried out to any extent, or made use of by the people at large. When the disease first appeared, a quarter of a century ago, it was suggested that the moment it became manifest in the leaves the whole crop should be mown down and burnt before the destructive virus reached the tubers. Now, after all this lapse of time, no better plan can be suggested; but such is the rapid growth of the fungus, that unless the haulms be destroyed immediately on the appearance of the parasite, it will be too late: if a week or less be allowed to elapse, the mycelium will be in the tubers, and all the haulms a rotten mass.—*Science Gossip*.

NOTES AND QUESTIONS ON THE KITCHEN GARDEN.

Large Crop of Potatoes.—Mr. J. H. Brown, Boston, Lincolnshire, planted this season 15 tons of Potatoes on 30 acres, and the yield is somewhat in excess of 10 tons to the acre of good and sound Potatoes. The land on which this extraordinary crop was grown is loam and clay, subsoil clay.

Tubers of *Tropæolum tuberosum* as a Vegetable.—This species of *Tropæolum* was common enough a few years ago, but has now apparently fallen out of remembrance. I have endeavoured in vain to procure either root or seed of it, and I shall feel much obliged if any of your readers will have the kindness to say where it is likely to be obtained. The tubers are an excellent vegetable, and possess all the agreeable flavour of the finest *Asparagus*.—H. B., Clapham.

Keeping Cabbages through the Winter.—A Michigan correspondent says: "We make a deep and wide 'dead furrow' with a plough, in dry, sandy soil; and then lay the Cabbages in it, packed close together with the stalks up. Then throw the earth back on to the Cabbages. The Cabbages should be dry and the weather cold, and care should be taken that the furrow left on the side of the row of Cabbages should be cleaned out, so as to carry off the water. If no water gets to the Cabbages, and the heads are sound, large, and hard when put in, we have never experienced any difficulty in keeping them perfectly until spring."

The Ohio Squash.—This is far superior in flavour to the common Vegetable Marrow. I am of opinion that it is more nutritious, and what is of great importance, is that it keeps a long time after being cut; these Squashes were used here last winter up to February, and were favourites to the last. For winter use, I cut them when they attain a measurement of from 18 inches to 24 inches in circumference, and I very seldom find one decay; I merely place them on shelves, in a dry situation, secure from frost. For cottagers, whose stock of winter vegetables is often limited, this Squash will be found most valuable, and anyone who can command two or three barrowfuls of well-rotted manure may grow it successfully: it may even be trained over hedges or other fences.—T. S.

THE HOUSEHOLD.

TOMATOES.

In point of flavour, wholesomeness, colour—in fact, on all points—there is no vegetable to be compared to a Tomato. Truffles may be the diamonds of the kitchen, as some writer calls them; and I am not prepared to deny the fact, for they are very expensive, and they are passing good to eat. Everybody's purse, however, is not equal to Truffles as a regular article of food, nor will Truffles go well with all and every dish. Tomatoes, on the contrary, are cheap enough; they can be preserved even in this country at small cost, so as to be available all the year round, and, harring white soups and sauces, there is not a savoury dish to which the judicious addition of their flavour is not a considerable improvement.

What is called Tomato sauce in this country is only a libel on the real article. Vinegar, in quantities more or less large, and cayenne pepper are used in the preparation of it, and, as might be expected, these things overpower completely and kill that pleasant acid taste, quite *sui generis*, to which is mainly due the great charm of the Tomato. In some shops you can buy preserved Tomato sauce made in France, and this will be found very good if it is really of Gallic origin, a fact easily ascertained by opening a bottle and tasting it. If it tastes of Tomatoes it is good French Tomato sauce; if the compound is very acid and hot to the mouth—in other words, if vinegar and cayenne predominate—then it is the British form—to be avoided. Good French Tomato sauce, however, is not very cheap; and as Tomatoes can be bought in London—at a certain season of the year—at a very moderate rate, those who choose to take the trouble can provide themselves with a sufficient stock of good wholesome Tomato sauce, if they will attend to the following directions. To ensure perfect success the Tomatoes should be gathered quite ripe on a bright sunny day, about one or two o'clock in the afternoon. Those who have no garden to grow Tomatoes in, or, having a garden, look out in vain for a bright sunny day, must manage as best they can. Cut up the Tomatoes into quarters, and put them into a saucepan with salt *quant. suff.*, a good handful of Basil, and three or four cloves of Garlic. A little water should be put into the saucepan to prevent the Tomatoes catching. When they are thoroughly done, turn them out upon a hair sieve, and wait till all the water has drained from them. Throw away this water, and proceed to pass the Tomatoes through the sieve. The pulp thus obtained is put into a saucepan to boil for about half an hour, and a moderate quantity of black pepper may be added to it according to taste. When the sauce is quite cold put it into wide-mouthed bottles, cork tightly, and tie up each cork with string or wire; dip the neck of each bottle into melted rosin, and you may then put them away to be used when required. The bottles should be of moderate size, for, once opened, the sauce will no longer keep good. If, before putting on the wire, the bottles of sauce are placed upright in a large vessel of cold water, and this is put on the fire until the water boils, the preservation will be more certain still, and the sauce will keep good any length of time. Care must be taken, however, not to remove the bottles from this *bain-marie* until the water has become perfectly cold.

Another way consists in letting the Tomato pulp reduce in a saucepan until it assumes the appearance of a very thick paste—care being taken to stir it constantly; when cool it is put away like jam in pots, and will keep any length of time. This is what is called *conserva* in Italy, only in that country the Tomato pulp is reduced to the consistency of a thick paste by the action of the sun instead of that of the fire. To use the *conserva*, a small quantity is dissolved in water. It makes very good sauce, but the taste is different from that of the fresh Tomato, or of the preserved sauce, described above.

Another way of preserving Tomatoes in countries where the heat of the sun is strong, consists in splitting them in halves and exposing them to the sun, taking care to take them in at night, and to turn over each individual half at least once a day, until they are quite dry. To make the sauce from these they should be soaked in cold water for six or seven hours; then boiled and passed through the sieve. The sauce thus obtained is slightly different in flavour from that made with *conserva*, or with the fresh fruit. To make sauce for present use the process is nearly the same as that for preserving; but there are many varieties, and these are some of them:

1. Cut up the Tomatoes and put them into a saucepan containing a little water, with some Parsley, Basil, Marjoram, and Thyme in judicious proportions, a clove of Garlic, a Laurel leaf or two, a few cloves, some salt, and some whole pepper; when thoroughly done strain all the water off, and pass through a hair sieve: put a piece of butter into a saucepan; add to it, when melted, a spoonful of flour and the Tomato pulp; mix thoroughly, and when warm the sauce is

ready for use. Sauce for preserving may be flavoured as is the above, instead of in the simpler manner which I have given before.

2. Cut up and remove from each Tomato the pips and watery substance they contain; put them into a saucepan with plenty of butter, pepper, salt, a Laurel leaf, and some Thyme; add a few spoonfuls of either stock, gravy, or Spanish sauce; keep stirring on the fire until they are reduced to a pulp, when you pass them through a sieve, and your sauce is made.

3. Mince a small quantity of bacon and put it into a saucepan with sweet herbs, salt, pepper, a few cloves, some minced Parsley, and a Shallot; when these ingredients are quite warm, put in the Tomatoes, cut up and bereft of their inside and pips; let the whole simmer, stirring frequently, for half an hour or more; when the Tomatoes are quite dissolved, pass them through the sieve and serve.

Stuffed Tomatoes make an excellent *entremet de légumes*. They may be stuffed with boiled rice or mashed Potatoes, or with any *farce* of meat, fish, or poultry. The way to do it is this. Cut each Tomato in halves, so as to cut across all the divisions there are in it; empty it of the pips, &c., and fill up each half with the stuffing. Lay them in a buttered dish and bake. Another way consists in making an incision in each Tomato, so as to be able to empty it; you then fill it with the *farce*, put it together again, and bake. Or they may be laid in a stewpan over slices of bacon, and stewed till done; some stock and Parsley, sweet herbs, &c., being added. The Tomatoes are then carefully taken out, and disposed on a dish; and the sauce they have stewed in, being strained and freed from superfluous fat, is poured over them. It must be borne in mind that either to bake or to stew Tomatoes as above takes very little time—ten minutes at most. Here is yet another form: Empty the Tomatoes as best you can without cutting them open too much and stuff them with the following composition:—To some well-flavoured Tomato sauce add bread crumbs until you bring it to a moderate consistency; heat up some eggs, one for every three Tomatoes to be stuffed; mix the whole well together, add more condiments, if necessary, stuff the Tomatoes with this, bake for a few minutes on a buttered dish, and serve.

This is an Italian recipe:—Peel your Tomatoes, cut them in halves, empty them, and place them on a dish that will stand the fire, and in which you have poured a small quantity of olive oil; make a mixture of bread crumbs, ham, Parsley, Basil, Marjoram, Thyme, some Garlic (all very finely minced), pepper, and salt. The bread crumbs should be in the proportion of two to one with the ham; the other things should be in such proportions as the talent of the cook can devise. This mixture should be stewed over the Tomatoes so as to almost cover them; a moderate quantity of salad oil should be poured over the top, and a few minutes' baking will produce a dish of the most toothsome description. Anchovies, Olives, Capers, Mushrooms, and even Truffles, chopped up small, may be used, either in addition to, or instead of the ham; and, lastly, those who do not like oil may use butter instead.—*Round the Table.*

Weeds on Walks.—A paragraph under this head appeared in THE GARDEN for July 6th recommending the use of muriatic acid for the purpose of killing weeds, which, it stated, perfectly answered the purpose. "It can be supplied from the makers at about five or six shillings per hundredweight. It completely destroys all vegetable life (insect and animal as well), mixed at the rate of half a pint to a gallon of water. One application of this will keep walks free from weeds, moss, or worm-casts for two years." So says the paragraph in question, and I lost no time in trying what appeared to be so cheap and simple a cure, but I am bound to say that in no respect did it answer my expectations. Mixed at the rate prescribed it was simply useless. Mixed at the rate of one quart to a gallon of water, the effect was visible, but temporary, as the walk where it was applied had to be hand-picked yesterday, one month afterwards. We will now come to the price, which, instead of being "five or six shillings per hundredweight," appears to be twenty-five shillings at the wholesale price, for, on finding I was charged twenty-eight shillings for the hundredweight I got, I at once wrote to remonstrate against what I believed to be an overcharge, when the price list of an eminent Liverpool firm was sent to me, in which "muriatic acid" was distinctly charged at the above price. I took care not to order any more of it at that figure, as to be effectual it must be applied very strong indeed, and in a large place would be a trifle too expensive.—H. J. W. S. [Mr. Temple, gardener at Packington Hall, Coventry, to whom the above has been submitted, says:—"I can add nothing more in regard to the weed-killer, which I have found to effect a vast saving, in the shape of labour. I have used it for these last six years, and its cost, in comparison with the labour which it has saved me, is simply nothing. With me it has always had the desired effect, mixed in the proportions stated above."]

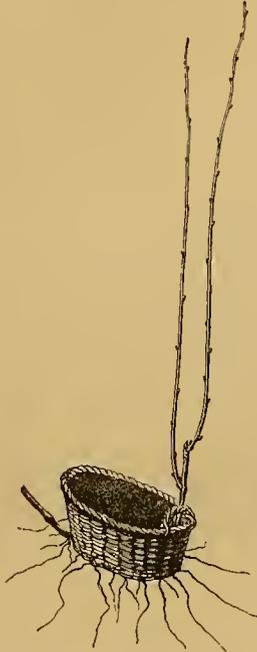
THE FRUIT GARDEN.

THE VINE IN THE OPEN AIR.

(Continued from p. 300.)

PROPAGATION.

As to the rearing of Grape vines, the best advice I can give to those who want only a few is—buy them of a respectable nurseryman. Strong plants of all those above specified and others may be had from the open ground at eightpence each, and considering that a year or two will be saved by using such plants, no investment of a few shillings could pay better than that spent in the purchase of two-year-old vines; but as every grower is likely to become a multiplier of grape-vines, I will briefly describe the easiest methods



Vine Layer raised and planted in a Basket.

of propagation. These are threefold—layers, cuttings, and eyes. I say nothing of seed nor grafting, because the first is useless unless for those in quest of new varieties, and the second implies a stock of some sort to start with, and an amount of skilful manipulation and after management, neither of which the out of door Grape grower can be expected to possess. Nothing can be simpler than the multiplication of vine plants by layering. Simply bend down any number of vine shoots, and cover them with six inches of earth, leaving their upper ends out of the ground, and the majority, if not all, will form roots at the buried portion. If these shoots have been cut half through under an eye, and so arranged in this covering as to keep the cut open by a stone or wooden wedge thrust into it, then every layer will assuredly root and may be safely separated from the parent stock or stool at the end of the season. By this process of layering, each shoot on a vine may be converted into an independent plant, or one long shoot may be made into many plants. It is a good plan to layer such shoots into separate pots, boxes, or baskets for each plant, then each can be removed as soon as rooted, without checking the growth of itself or the others. Our figure shows such a layer established in a basket ready to be grown on or transplanted anywhere at once. There are also special advantages in the use of baskets for this purpose, as the roots can run through in search of food, while a sufficient number remain together within the basket to enable the plant to be removed without a check. Propagation by cuttings is much practised on the Continent and in America, but is little used in this country. Any piece of well-ripened vine wood, put a few inches into the ground, may form roots; but it may not, and hence to a considerable extent probably the prejudices against rearing vines by cuttings. Vine cuttings fail chiefly from three causes—imperfectly ripened wood, too many eyes left out of the ground, and unskilled making and planting. Green wood full of sap has not sufficient strength to push roots; it falls a prey to rotteness or a victim to the frost, and there is an end of it. An excessive number of eyes destroys the

cuttings by exhaustion. Every eye rushes into growth and expends all the organizable matter of the vine rod in its growth, leaving none wherewith to form roots. On the contrary, had one eye been left at the summit of a cutting from nine to eighteen inches long, the growth of that would have quickened all the vital force in the cutting, and sent a part of it to work to push out roots. The cuttings are often unskilfully made of vine shoots—cut into lengths anyhow and anywhere. Such may grow, but those rightly made must; and the essence of a well-made vine cutting is in its heel. Each shoot should be heeled off another and older shoot; that is, a bit of the stem, two or more years old, at the base of the wood of the current year, should be left to form a splinter or knob at the end of it. Such cuttings will grow if they are inserted deep enough and the earth made firm around their base. The whole cutting, long or short, should also be buried, except just the crown of the top bud. No sun nor air can then exhaust the sap, and the cutting is almost as surely a plant as if it were already rooted. Perhaps December or early in January is the best season for the planting of cuttings out of doors. The most common mode of propagation is by eyes. Each eye with about half an inch of wood on either side of it can readily be converted into a vine plant, thus:—Cut the eyes with wood of the length stated, place each singly or several together firmly into pots or pans filled with sandy loam, cover over the crown of the eye—no more, and place in a bottom heat of 70°. Give little or no water till the eyes start into growth, and in a month or five weeks each eye will have become a rooted plant. Of course they will be shifted into larger pots, and gradually hardened off before they are planted in the open air. I have learned another easy mode of rearing vines, by accident. Having kept a great many Grapes in bottles of water, as recommended by Mr. Robinson, I found that many of the shoots emitted a matted ring of healthy roots, so lusty and strong that they could scarcely be got out of the bottles; thus indirectly confirming the advice of those who have recommended the striking of Rose cuttings in bottles of water in the sun. These vine cuttings, however, were rooted in a somewhat dark and wholly sunless fruit room.

Vines are likewise occasionally propagated by grafting. This, however, is mostly resorted to for the rapid increase of new varieties, and for hastening the fruiting of seedlings. It may, however, also



Vine Grafting at Thomey.

be useful for diverting the power of a strong, useless stock, into good varieties. The French mode of grafting vines is illustrated in the accompanying woodcuts. The operation is performed as soon as the sap begins to flow in the spring. A cut is merely made in the smoothest side of the scion and stock, and the two sides firmly tied together and securely covered with grafting wax. In England grafting is mostly performed by the insertion of an eye, with a portion of wood attached, either early in the autumn, when the sap is descending, or late in the spring, after the leaves on the stock are more than half expanded, and when it has ceased to bleed when wounded. At either season, the buds, with their woody base, take well. There is, however, this advantage in autumnal budding, that if the union is

thoroughly effected before winter, the bud may bring forth and ripen a bunch of Grapes the next season as well as if it had not been disturbed. Practically, however, propagation by grafting will probably not be much employed in out-door Grape culture, though it may prove interesting and useful for experimenting with several varieties on a small area.—CHASSELAS.

(To be continued.)

Preserving Fruits in Winter.—The following method of keeping Peaches, Apricots, and Pears has, according to M. Mout, proved quite successful, and is thus described by him in the *Revue Horticole*.—The fruits are gathered before they are quite ripe and wrapped up separately in pieces of well-sized tissue paper. They are then placed in tin boxes, which are divided into compartments, one for each fruit. The lid is kept closed by lapping a piece of wire round the box, and the air is excluded by melting bottle wax round the edge. The boxes are then laid in a large wooden chest, raised about 6 inches from the ground on four feet. The bottom of the chest contains a layer of powdered charcoal a foot deep, on which rests a wooden frame-work of pigeon-holes, each about 4 inches larger in diameter than the tin boxes, the frame-work itself having a space of 10 inches between it and the sides of the chest, which is filled up with powdered charcoal. The tin boxes containing the fruit having been deposited in the pigeon-holes, the whole is covered with powdered charcoal to the depth of a foot. There is thus at all points a layer of charcoal 10 inches or 12 inches thick between the tin boxes and the external air. The chest is closed with a well-fitting lid and placed in a cellar with a constant temperature of from 35° to 45° Fahr. By this means Peaches and Apricots have been kept perfectly fresh up to the 1st of January, and Doyenné and Beurré Pears up to the beginning of March. The only precautions necessary to be observed are that the fruit should be gathered before they are quite ripe, that they should be carefully wrapped up, without rubbing them, in dry and well-sized tissue-paper, that the tin boxes should be wiped perfectly dry, and that the fruit should be placed in them within twenty-four hours after gathering. The only expense is in the first outlay, as the charcoal can be dried and used again the following season.

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

The Fruit Crop in Switzerland.—The Swiss fruit trade is said to have increased this year to enormous dimensions. The united Swiss railways are scarcely able to supply sufficient waggons for the masses of fruit which are deposited at the stations for transport to Germany.

Apples from France.—In consequence of the almost total failure of the Apple crop in the orchards and gardens in the north of England this season, French Apples will be in great demand. A cargo just arrived in the Tyne is stated to be selling at £16 per ton, whilst the season before last, during the war, French Apples of similar quality were sold in Shields at £5 per ton.

Pear-leaf Fungus.—Can you oblige me with the name of the bright orange-looking Fungus on the Pear leaves sent?—W. C. M. [It is *Rostelia cancellata*, an *Oecidium* peculiar to the leaves of Pear trees. Oersted says that the *Podisma Sabineæ* (the yellow fleshy growth on the Savin) is a form of this species. It would be interesting to know if any Savin plants, and more especially any with the *Podisma* upon them, are growing near the Pear trees from which the blighted leaves have been taken.]

A New Late-ripening Pear.—A very valuable dessert Pear has lately come very much into notice in Belgium, under the name of Beurré Dubousson. It produces fruit as large as those of Beurré Clairgeau, and of the finest quality, the flesh being fine-grained, melting, sugary, slightly aromatic, and very juicy. It begins to ripen in December, and keeps until April, preserving its fine qualities to the last. The demand for this Pear has been so great in Belgium, that it is now hardly possible to obtain a plant of it, or even cuttings, in any of the nurseries there.

Peaches and Nectarines under Glass.—Although the present year has, perhaps, been one of the most inclement and sunless for forcing fruits on record, I have, nevertheless, had a splendid crop of Peaches and Nectarines in the greatest perfection. The "set" of fruit was extraordinarily thick. In one house alone I removed as thinnings upwards of 1,500 fruit. I had the curiosity to count the fruit on about one square yard of surface of a *Violette Hatvie* Nectarine, and they exceeded 300; equally thickly set was a tree of Royal George Peach. My fruit, which was highly coloured, and of unsurpassable flavour, weighed 8 oz., 9 oz., 10 oz., and in one instance 1½ oz. each. I have gathered this year 550 Peaches and Nectarines out of one house alone, 40 feet in length by 8 feet wide, and estimate the value of the yield at about £40.—WILSON W. BOARDMAN, *Altrincham*.

Iron a cure for Blight on Fruit Trees.—I had, says a correspondent of an American paper, a fine Pear tree (*Flemish Beauty*) that became affected, first by blight in one limb, which I removed, and then another and another were affected in the same way, until I had removed a considerable portion of the top of the tree. Early next spring I resolved to try the application of iron filings to the roots. I procured my iron, removed the soil from the roots carefully, deposited the iron between them, and replaced the earth. There was no further progress in the blight; the tree continued to grow that season, and the next leaves and blossoms came out vigorously; no black spots appeared on the leaves and the tree bore finely; and no appearance of disease was seen in the tree afterwards. In subsequent conversations with friends I found that some of them had become informed on the same subject, and had tried the remedy with perfect success. Some told me they had procured turning and drilling chips from the machine-shops, and had used them, as they thought, with much advantage to their trees.

GARDENING ROUND LONDON.

(DURING THE PRESENT WEEK.)

BY OUR SPECIAL REPORTER.

PRIVATE GARDENS.

Flower Garden.—Bedding plants in most places have now been partially removed, and sub-tropical plants have been lifted, potted, and stored away pretty closely together for the winter. Geraniums on being taken up are divested of the greater portion of their leaves, and of any straggling branches or roots with which they may be furnished, and are potted in as small pots as possible, in a light sandy loam; they receive a good watering when first potted, but afterwards just enough is given to keep the plants alive. They are stored on shelves between other plants in greenhouses, or in frames. *Calceolarias* and *Gazanias* are now being propagated in cold frames. *Verbenas*, *Petunias*, and other well rooted cuttings, if not already done, are being transplanted from their cutting pots, using a richer compost than that in which they have been growing. Pansies, Daisies, Canterbury Bells, Sweet Williams, Wallflowers, yellow Feverfew, *Alyssums*, *Iberises*, &c., are now being transplanted into beds or borders for spring decoration. *Narcissus*, *Crocus*, *Hyacinth* and *Tulip* bulbs are also being planted amongst them. Small beds are also being filled with hardy succulents and halbs. Privet hedges, Box edgings, and hedges are being formed, and *Rhododendrons* and other ever-greens are being planted.

Conservatories.—The earliest *Cyclameus*, autumn-flowering *Heaths*, forced *Camellias*, *Tree Carnations*, *Oleanders*, *Eacodonia nageliioides*, *Begonia Weltoniensiis*, *Cassia lævigata*, *Cypridium insigne*, a few other cool house Orchids, young *Chorozemas*, *Tremandras*, *Hedearoma fuchsioides*, *Lasiandra macrantha*, and a few other plants, keep our conservatories at present gay with flowers. *Fuchsias*, a few *Acacias*, *Plumbago capensis*, and some *Roses* planted out in borders still continue to bloom admirably. Some of the taller-growing *Chrysanthemums* are being taken indoors and placed amongst the *Camellias*, *Rhododendrons*, &c., in the beds; the dwarfier ones are set on the side stages, but where there is convenience such plants are kept in separate houses until they begin to bloom. The tops of some of the shoots with flower buds on them are also taken off, and when rooted form nice dwarf small plants, which come well into bloom before Christmas. Plants of tree *Mignonette* are being trained up to neat stakes, at the top of which are fixed trellises for them to be trained over. Some *Carnations* are being potted, so as to come into bloom a little later in the season. *Solanums* form at present very attractive features in these structures. Some of their fruits are beautifully coloured, whilst on other plants they are still in a very young state. *Skimmia japonica* is also now laden with fruit, and, planted along the front borders of conservatories in the natural style, it is exceedingly attractive. The more tender kinds of plants, such as *Orchids*, are kept in the warmest corners. *Tree Ferns*, *Palms*, *Camellias*, *Azaleas*, *Rhododendrons*, half-hardy *Conifers*, *Acacias*, &c., planted in borders, still receive plenty of water, though the supply is rather less than when they were in active growth.

Stoves.—Any young plants still in active growth are well watered and kept in the warmer corners. Washing leaves and cleaning plants from insects continue to be the chief operations in this department. *Euphorbia jacquiniiflora* and *Poinsettia pulcherrima* are kept as near the glass as possible. Young plants of the same are plunged in bottom heat near the glass, so as to induce good crowns. *Gesneras* are now very attractive; those that have come fully into bloom are kept a little dry, but those that have not yet opened their blooms are supplied with a little weak manure water. *Caladiums* are being gradually dried off. *Achimenes* and *Gloxinias* that have done blooming are also stored under stages and on side shelves to dry. *Orchids* are being kept a little drier than hitherto. The use of the syringe is also dispensed with for a time amongst plants in pots, but those on blocks are syringed once or twice a day.

Specimen Plants.—The stems of specimens of *Dipladeias*, *Clerodendrons*, *Stephanotis*, and *Allamandas* are now loosened from the trellises on which they have been trained, and are attached loosely to cords placed near the glass. In this way they ripen their wood better than in any other. They enjoy a tolerably warm temperature and a moderate, though decreasing, supply of water. *Ixoras*, which still continue to bloom, are now shifted into larger pots, or are shaken out of those they occupy; in the latter case their roots are reduced, and they are again repotted into similarly-sized pots. Newly-potted plants are encouraged in growth by being plunged in a brisk bottom heat. *Statice*s are shifted and kept in an intermediate house. *Dracophyllum gracile* has all the old wood coiled around its supports, and only that formed since

the removal of last year's blooms is retained. Azaleas and Heaths are now housed, and are neatly tied into proper form. Any requiring a renewal of stakes are completely loosened from their old supports, and are staked afresh. Plants of *Phanocoma* and *Aphelaxis* are kept in airy houses; they are never put outside during summer, nor forced into bloom; on the contrary, they are found to do best under cool-house treatment. Show *Pelargoniums* are breaking away freely. Those required for early blooming have been repotted, some into larger pots, and others into the same sized ones. Those, however, that are only for late blooming still remain in the old pots. The plants are elevated, so as to be near the glass.

Succulents.—All succulents bedded out in summer, but not hardy enough to stand the winter, are now being taken indoors as speedily as possible. *Echeveria metallica* is put into pots just large enough to contain its roots. The largest specimens of this species however, are as a rule not planted out, but only plunged; other *Echeverias* are lifted and stored thickly in boxes, or potted singly. The hardier kinds of *Sedums*, *Sempervivums*, &c., are lifted and replanted in the form of edgings. *Sempervivum californicum*, *montanum*, *arachnoideum*, and *tectorum* are perhaps the best and amongst the hardiest for this purpose. Aloes and Agaves are kept in cool airy houses; as they yet continue to grow they receive plenty of water, and a little artificial heat and air at the same time is of great service to them at this season.

Kitchen Garden Forcing Department.—Pine plants are being repotted and suckers taken off and potted as they require it. Early Vines are being pruned. Young pot Vines are set out of doors in an exposed situation, so as to thoroughly ripen their wood. Cucumbers are frequently syringed, stopped, and tied. Young Figs in pots are still out of doors in sheltered positions, but preparation is being made for bringing them indoors. Peach and Nectarine trees in pots are also outside; to those permanently indoors abundance of air is given. Lettuces are being transplanted in frames. Endive is also being transplanted in frames, both for blanching and for keeping up a succession. Of Chicory some roots are taken up, potted, or placed thickly in pots in a Mushroom house. Kidney Beans continue to be sown indoors, in 6 and 8-inch pots. They are freely syringed and watered, and earthed up as they require it. A first crop of these has been gathered from early sowings. Sowings of small salads are made according to demand.

Hardy Fruit and Kitchen Garden Department.—Soil for fruit trees about to be moved is being collected. In some cases planting has commenced, but as a rule that operation is deferred until the leaves have fallen. Fresh plantations of Raspberries are being made, using for the purpose suckers from old stools. Cuttings of Gooseberry and Currant bushes are being made; the buds on that portion of the shoot that is to be inserted in the soil are all taken off, which prevents to some extent the production of suckers. Old Strawberry plantations are being trenched, and the soil thrown up into ridges. All empty spaces are being manured and roughly trenched. Young Carrots are being thinned and cleaned. Empty spaces are planted thickly with Coleworts. Endive is blanched by means of tying it up, and by planting it in dark frames.

NURSERIES.

Indoor Department.—During the last fortnight large importations of Orchids have been received in some of our London nurseries. As soon as received, the plants were spread out, so as to distinguish the living from the dead. Such as are alive are hung up by the roots or are attached to wooden blocks, and kept in a warm moist house until they show signs of active growth. They are well shaded and occasionally syringed, and as soon as they begin to grow freely some will be repotted or placed on new blocks; but in many cases they are left on the blocks they were first attached to; they will then be removed to the Orchid house proper. Pieces of soil that come home about the roots of these and other imported plants are carefully preserved for a time, as they sometimes produce valuable Ferns and Mosses, or it may be unknown plants. Imported Orchids commonly remain in their first position for six months or more, but as they advance in growth they are removed to make room for another supply. In raising Fern spores, a layer of very rough peat is laid on the surface of the side benches, and *Gymnogrammas* and other fine kinds are placed on the same shelf. Fronds are also cut off various kinds and laid here and there over the peat, in order that the spores may drop voluntarily. In this way the spores fall on the rough peat, and continue coming up for many months. As soon as any have reached a goodly size they are lifted and potted, so as to make room for the numerous progeny likely to follow. Ferns also continue to be raised in the ordinary way; they are sown in pots or pans, and covered over with bell-glasses or squares of glass until they are pricked off. They are afterwards potted on as they require

it. The paint used as shading on the glass throughout the summer is being washed off with a rough brush and water, but above Pitcher plants, Filmy Ferns, and similar plants it is still retained. *Achimenes* and *Gloxinias* in pots are stored one above another under stages in warm houses, in such a manner as not to get wet from drip or other means. Young plants of *Cyanophyllum magnificum* are repotted into a mixture of loam, leaf-mould, a little peat, and silver sand enough to make all friable; the pots are then plunged in bottom heat in the propagating pit. When *Croton elegans* has grown into long unshapely plants the points are cut off and grafted on to small stocks either of the same or of other kinds of *Crotons*. Variegated *Crotons* are grafted on the green kinds. Cuttings of *Rhopalas* are being inserted in small pots filled with sandy peat, and surfaced with a layer of silver sand. The pots are then plunged in bottom heat inside of close densely-shaded frames in the propagating houses; these are rather difficult plants to strike. *Ixoras*, *Gardenias*, *Stephanotis*, and many other plants are easily propagated under similar circumstances. Heaths are still being propagated. For this purpose the weakest points and side shoots are selected about an inch or so in length, stripped of a few of their lower leaves, cut cleanly across with a sharp knife below a joint, and pricked pretty thickly into 6-inch pots, keeping them well in the centre so as to be easily covered with a bell-glass. The pots being filled and covered are placed under handlights or frames in cool houses and closely shaded. Spring struck plants are placed in cold frames in their cutting pots. Older plants are also placed under cover. Those in 6-inch pots, if there is not room for them indoors or in frames, have a wooden frame put over them out of doors, which is covered at night with mats. *Valloas* that have done blooming are stored away under stages. Young *Fuchsias*, and such as were started early, are also similarly treated. Heaths, *Cyclamens*, and *Solanums* are in some cases stored under greenhouse stages until room can be obtained for them elsewhere. Plants of *Primula japonica* are set under glass in cool pits or frames. Dahlias that have remained in pots during the summer are cut down and stored away under the stages of greenhouses. The general stock of Pine-apples is being repotted in good fibrous loam, and plunged closely together in tan beds.

Outdoor Department.—Briar stocks are procured from hedges and similar places, from which they are obtainable; before replanting them their roots are cut away rather closely, and their side branches and tops are removed. Peach trees in pots are still plunged out of doors, as are also Apricots, Nectarines, and Figs. Vines in pots are placed out of doors, and their canes are tied up to walls or high hedges, so as to get thoroughly hardened. Good specimens of evergreen shrubs are being removed for sale, and the smallest ones transplanted again. Such pieces of fruit tree stocks as come above the graft or bud are being cut over close to the grafted shoot. Herbaceous plants in pots are being cleaned, and set on beds of ashes, some coconut fibre being worked in between the pots. A wooden frame consisting of hoops and bars is erected over the most tender and valuable kinds so that they may be easily protected with mats. As a rule, however, they remain unprotected. Over young Conifers, *Chrysanthemums*, and Heaths a similar frame is fixed.

MARKET GARDENS.

CABBAGE plants are now being planted out. Some are engaged in lifting the plants, others in carrying them, some in measuring off the ground, some in digging, some in filling in the manure into the trenches before the diggers, and others are employed in planting. In this way a piece of ground just cleared of an old crop in the morning is planted with another before the evening. Strong plants of Lettuces are planted in warm positions a foot apart each way. Younger plants are also being pricked into frames. Several sowings of Spinach have been made on the ground hitherto occupied by Onions and French Beans. Some are up and have been hoed once or twice, whilst others are only just appearing above ground. French Beans decaying are being removed from amongst Broccoli and Brussels Sprouts, so as to permit of a freer circulation of air amongst them. Whole patches of Coleworts are being removed at once, in order to make room for other plants. Cauliflowers are planted out under handlights and in frames. The handlights are placed 4 feet apart each way, and nine plants are inserted under each. In the frames they are pricked out in rows 6 inches apart, and 4 inches asunder in the row. A good supply of straw or rank litter is always kept at hand for covering. All vacant ground is being manured and dug or trenched. The latest made Mushroom beds in the open air have mostly been spawned. In some cases dry straw is used for covering them, and in others rank litter. The earliest spawned ones are now in good bearing. From the centre of one ridge to the centre of the next commonly measures 8 feet, 4 feet being allowed for each bed, 1½ foot for covering, and 2½ feet for the alley between the beds.

THE GARDEN.

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"This is an art

Which does mend nature : change it rather : but
THE ART ITSELF IS NATURE."—*Shakespeare.*

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THE SIX OF SPADES.

CHAPTER XXII.

Mr. Evans on Shows and Showing (concluded).

"Is it a good thing for gardeners to show?" That's a question which should have a cautious answer, almost as cautious as a reply which I once heard from a shrewd old Spade to an impudent young ditto, who asked him how he grew his prize *Calceolarias*? The question seemed to me considerably cooler than Cucumbers, because he who put it had contended with him to whom it was put on several occasions in this very class, and it sounded very like a request made by a soldier in battle to his enemy, for the loan of his sword, with a view to its insertion in the owner's ribs. I listened accordingly with great interest to hear what the old man would say, and, after a very short surprise and hesitation, slowly and solemnly he said this: "In growing the herbaceous *Calceolaria* for exhibition in pots, we find from experience that everything depends upon everything else, and we act accordingly."

So to the inquiry, "Is it desirable that gardeners should exhibit?" we answer cautiously, "It depends." If the master is willing, and the gardener has time and talent (he'll find the time if he has got the talent, by beginning work sooner or ending it later), let him show by all means. The hope of success will be to him one of those happy thoughts which lighten his daily toil, as the thought of a holiday to a lad at his sums, of a Fair day to a farm-boy at his plough, of a review day to a volunteer at his drill. Besides the Great Light of all, we need these bits of brightness on our journey, and the same kind mercy sends them all. Then the show itself will encourage him if he wins, and teach him if he loses; and, win or lose, it is good for us gardeners to see plants, flowers, fruit, and vegetables, as perfect as care and skill can make them, and to find out, as far as possible, how this has been done. If I were the proprietor of a large garden, I should like my gardener to attend exhibitions occasionally, whether he exhibited or not, and I know several wealthy and wise masters who every now and then send their head gardeners to London to visit the nurseries and the shows.

There is, of course, a temptation for those gardeners who show to neglect some of their duties, in order that they may bestow more time upon their favorites. I fell into this error very soon after I began to exhibit, and received a rap on the knuckles, which I have remembered ever since. My first love was the Carnation, and she occupied too much of my thoughts and time, not to mention of my money also, for I have given half-a-sovereign for a pair of *Picotees*, when I had but £1 per week. Well, my good old master came one morning into the kitchen-garden, and walking up to me, between two long rows of my prize plants carefully potted, tied to their neat green stakes, and having their big buds bound with bast, he said, "Evans, if you do not send in a better supply of fruit and vegetables, I'm afraid that I shall fancy a *Carnation Tart*." It made me tremble to think of those buds a-baking, and I lost no time in acting upon the hint. But it will be found that, as a rule, though there are many exceptions, they who exhibit successfully will have other things, besides those in which they specially excel, a little better in quality and more abundant in quantity than their neighbours, because they have more opportunities of seeing that which is the best in its class, and of learning how to humour it. So we will suppose, if you please, that it has been decided by master and gardener that the latter is to show, and pass on to the next question which presents itself, namely, What is to be shown? It's an important question, because a great many exhibitors fail from attempting too much. I remember reading in the newspapers

that, when a few of our cavalry went a-galloping at Balaklava into the middle of the Russian army, one of them French generals remarked that it was grand, but it wasn't war; and it's no good for a gardener, however much he may know, to go a-charging on his bit of a span-roofed greenhouse against a man with half a mile of glass. He may now and then win a victory over some one bigger but slower than himself, just as you've seen a game Bantam cock make a great *Cochin* stride off in search of his mother; but whenever he meets a gardener who knows as much as he does, with more room and resources, why weight and size must tell, and the lesser bird will get the spur in his brain. No doubt we should all of us like to show *Lælia purpurata* with sixty-four spikes of bloom as some of us have seen it shown, tree Ferns as tall as would travel under the railway arch, *Thrinax elegans* 8 feet by 6 feet, *Anætochilus* in brewing tubs, and *Azaleas* in soft-water butts; no doubt we all have the talent to do so; but if we have not the space nor the means, perhaps we had better select something which we can grow, and grow to perfection.

In my younger days, one of my masters came to me and said, "Evans, I am going to enlarge the stove and the little New Holland House, and we'll go in for specimen plants." Well, the addition of two or three new lights made our tiny places look quite grand in our eyes. I was sent to London to purchase plants, and returned from the nurseries of Messrs. Veitch, Williams, Bull, Lee, Henderson, and Fraser, with the nicest lot of young stuff for training you ever set your eyes on. So with the best of turf, peat, sphagnum, and sand, and with any amount of heat and moisture, I went to work in earnest. Of course I had to fight the usual foes. Fungus sprung up in my bed of tan, until one gardener, as came a visiting, very nearly got his head punched for inquiring, as he entered the stove, whether it was our house for mushrooms; mealy bug and scale commenced operations; but time and resolution, turpentine and patience, overcame them all, and my plants started off a growing, like *Custard Marrows* in a hotbed. It was very pleasant to watch them for the first two seasons, and master was in and out continual, talking about this show and that show, and the cups we were going to win; but when, in the third spring, they began a roming and a scorming* all over the house, and to rub themselves against the roof, looking something like a swan in a hen-coop, and seeming to say, "How could you bring us into such a poky place as this?" when the *Thief-Palm* unfolded a leaf about the size of a small door, and *Alocasia macrorhiza* favoured us with foliage having the circumference of a large tea-tray, we began to find out that we had made a mistake, and to feel as uncomfortable about our numerous and growing family as the old woman who lived in a shoe. And the worst of it was, that, after all our trouble, when we had selected our twelve for exhibition (three of them, I remember, were taken out through the roof, the door being much too narrow), we were signally defeated by a nurseryman from a distance, who had plants to which ours were pigmies.

Let no gardener, who has only a moderate space under glass, attempt to show collections of stove and greenhouse plants, but let him either confine himself to some special class, such as the *Gloxinia* for the stove and the *Pelargonium* for the greenhouse, or, using his houses for general purposes, let him exhibit in some other department—hardy flowers, or vegetables, or fruit. Let him consider what he *can* do, and then determine to do it thoroughly. Let him never rest satisfied until "First Prize" is nailed on his box. There's only one exhibition in which I should prefer to be second, and that's an exhibition of genteel brutality, which they call a duel. Let him make up his mind, I say, to excel in something, and there's as much honour and as much happiness to be found in producing twelve beautiful *Auriculas* as in the display of twelve huge specimens, which have filled two trucks on the rail.

And now I must warn exhibitors, that, although we gardeners are as honest as other folks (we ought to be a little bit more so, and I sometimes venture to think that we are, because we work so near to God), they will meet now and

* "Rom" I believe to be a corruption of roam, but I am powerless to throw any light upon "scorm."

then with certain dodges and deceptions designed to mislead them by a few floral sharpers, who, if they can't win by honours, will try to win by tricks. Three times, my brothers, have I been done by these individuals several shades browner than pleased my taste.

On the first occasion, it is true, I was taken in quite good-humouredly, only for the fun of the thing, and could not have won under any circumstances, but somehow I didn't like it. My master had backed me against the gardener of a relation, who lived in the neighbourhood, to exhibit twelve Pansies in pots at the next local flower show; and I was rather surprised to hear, only a week before the exhibition, that we were invited to pay a friendly visit (I was frequently taken out for a holiday of this kind by my employer—a true brother gardener) into the enemy's camp. We went accordingly, and in walking round the gardens we came upon an uncovered frame, in which were twelve Pansies in pots. No remark was made on them, and we just passed leisurely by, as though nobody took much interest in them, but we made the most of time and eyesight. And the consequence was, that we were in tip-top spirits during the rest of our visit, and when we were out of the grounds, and master asked me what I thought of his wager, I remember that I answered, "It's a Ribston Pippin to a Siberian Crab on our lot, unless the gents, as is going to judge, prefers fourpenny bits to florins!" Well the show-day came, and the judges came, and they preferred, both to fourpennies and florins, some crown pieces which came, in the form of twelve plants much finer than ours, and were shown by—our relation! Their prize specimens were concealed in the Asparagus bed all the time of our visit; and when the race came, they sailed away from us, like a yacht from a barge full o' coals.

Disappointment number two happened some time afterwards, when, having a good deal of glass under my charge, I used to grow some large specimen plants. On one occasion, I had some twenty of these, in readiness for a grand floral exhibition, which was to be held in connection with our county agricultural show, and I was naturally very anxious to win a special prize of twenty pounds that was offered for twelve stove and greenhouse plants. Looking round, on the morning of the exhibition, I saw that I had only one man to fear, a stranger who had brought from a distance some plants quite as good as my own, with others of an inferior quality. I must tell you that there was a special prize of five pounds for six stove and greenhouse, and another of two pounds for a single specimen, and that we both of us showed in the three classes. Well, as soon as we had "staged," I went to have a squint at the enemy, and I was rejoiced to find that though he knew as much as I did about growing, he seemed to know precious little about showing plants. He put up a very good single specimen, but not the best he had; he showed four first-rate plants in his six with two altogether inferior; and in his twelve there were some seven grand specimens, with three common-place, and two had enough to condemn the lot. In consequence of this, I made some changes, setting my best plant against his single specimen, and distributing my others so as to secure the first prize throughout. I was to win in all. There could be no doubt about it, and all my brother gardeners said so.

I remembered afterwards that just as we were leaving the big tent for the judges to come in, my opponent sent back his assistant to find a syringe which he had left among the plants. Perhaps you guess what that gentleman, not finding the squirt, amused himself in doing? At all events, when we exhibitors were re-admitted into the show, I found that he had transferred his single specimen (substituting a rubbishy old Caladium, worth about three shillings, and having the audacious impudence to place it side by side with my best *Ixora*), together with the best four out of his six, to his twelve, of course removing the invalids, and so (succeeding in his little game, which was to make me divide my forces) had won the £20 prize, and only left me £7.

You'd think an old fish that had twice been pricked would be very hard to catch, but once again, and that no long time since, I took the bait that was dangled before me, and gulped it down hook and all. I thought myself quite sure of a special prize which had been offered at our annual show, for six exotic Ferns, and I had put up half a dozen very decent specimens,

when another distinguished foreigner placed four as good as mine beside them, and then carelessly enquired from his foreman what other two he had brought? "There's the big Farleyense," he replied, "and that *Leptopteris*, which you thought of showing as a single specimen, but they're at the far end of the van, and it'll be half an hour before I can bring them." "The big Farleyense!" why there was not at that time, as I believed, more than four or five such treasures in the country, "and the specimen *Leptopteris*," whereas I had only a pinch of *Todæa* under a small bell-glass. I caved in. I conveyed my Ferns into another tent, and showed for the ordinary prize given by our society. Friends, I've hardly patience to tell you that the big Farleyense was just visible to the naked eye under a great glass-dome,* as would have held a *Pæony*, and that the *Leptopteris* had lost its head on the journey, and came out nothing but a *Pteris* (*argyræa*) about half as good as my own. There's another yet more dishonest deception which is practised by certain parties as cannot afford to keep a conscience. I mean the borrowing and the showing of other people's plants. You are probably aware that the Council of the Manchester Botanical Society and the committees of several other horticultural meetings have been quite unable to see the beauty of this new form of petty larceny, and have gone at it rather free. Acting together they certainly ought to be able to do that which one of our greatest exhibitors once did for himself, namely, to expose and to punish suspected rognery. He was informed that a certain grower of plants had promised to lend the best of them to his principal opponent at a forthcoming show; and a short time before the exhibition he paid a visit to the object of suspicion. On the day of the show the plants appeared, as he was told they would, in the collection of his adversary; but he won, nevertheless, the first prize. Rogues is often fools, and this one, after a few goes of gin, began a comparing and complaining before the public. On this my friend, as I'm proud to call him, quietly fetches the chairman and several members of the committee, and when this floral felon was catching his wind for another innings, he says very distinct, so that every one in the tent could hear him nicely, "I demand that this exhibitor may be disqualified for showing plants which are not his own. I saw them three weeks ago in Mr. —'s collection, and suspecting conspiracy, I put a small piece of tobacco pipe close to the tallies of that *Ixora*, that *Bougainvillea*, that *Allamanda*, and that *Erica*. Let the secretary examine the pots." He did so, and produced the pipes. The culprit, admitting his guilt in the usual way, that is by challenging everybody to fight, was disqualified, and struck off the list of subscribers.

I've kept you too long, and I'll only trouble you with one more bit of advice. Whatever else you show, don't show temper. If you win, don't gawstert†, and if you lose, don't sulk. Always bear in mind, that in Showing, as in everything else, Pluck, Patience, and Perspiration must win the day.

S. R. H.

Crown Lands.—The Commissioners of Woods, Forests, and Land Revenues have issued their 50th report. It relates to the financial year 1871-2. The income from the land revenue of the year amounted to £409,685, and the expenditure to £34,707; the income from Windsor Parks and woods to £4,971 and the expenditure to £29,563, including £11,787 for new works and improvements; the income from the Royal forests and woodlands was £32,145, and the expenditure was £22,327, making a total income of £446,801, and an expenditure of £86,597. The year's accounts for the Royal forests and woodlands show the following results:—New Forest—receipts £12,441, expenditure £10,037; Dean Forest (exclusive of mines)—receipts £7,408, expenditure £6,221; Highmenadow woods—receipts £3,029, expenditure £1,572; Alice Holt woods—receipts £1,450, expenditure £1,573; Woolmer Estate—receipts £896, expenditure £132; Bere woods—receipts £1,650, expenditure £677; Parkhurst woods—receipts £648, expenditure £297; Hazleborough wood—receipts £143, expenditure £129; Salcey wood—receipts £535, expenditure £369; Delamere woods—receipts £3,688, expenditure £921; Chopwell woods—receipts £257, expenditure £399. The receipts from Chopwell woods are derived from a variety of sources, such as from rent of land, cottages, and gardens.

* Dome intended. † Gawster, to brag, to boast.

NOTES OF THE WEEK.

— WE saw the other day a fine new *Bouvardia* in Messrs. E. G. Henderson's Nurseries, St. John's Wood, where it has been raised from seed. It is a hybrid between *B. jasminiflora*, which was the female parent, and *B. Humboldtii*. It possesses a strong constitution, and produces good clusters of pure white flowers, the tubes of which are about a quarter of an inch shorter than those of the male parent. The divisions of the corolla are very large and solid, and the blossoms are delightfully fragrant. It will be a valuable addition to the really useful class of plants to which it belongs.

— THERE is at present a magnificent specimen of that fine *Melastomad*, *Lasiandra macrantha*, in Messrs. Veitch's nurseries, Chelsea, literally loaded with flowers. The plant measures fully 3 feet in diameter and 4 feet in height. It is trained in the form of a pyramid, densely furnished with short, stocky growth, and flower buds, of which there are about 300 now on the plant. The flowers are large and extremely showy; they open in the morning, fade at night, and are succeeded next day by others equally handsome. The plant in question was grown in a cool house in summer, and is now introduced to a warmer one, in order to induce the blooms to open more freely.

— THE *Castor Oil* and *Rice Paper* plants are still (October 24th) in good condition in our different London parks, their noble leaves, notwithstanding the early frosts we experienced and the continuance of wet we have lately had, being nearly as beautiful as ever, thus making the beds in which they grow presentable in appearance when otherwise they would have been empty, if planted with ordinary bedding plants.

— IT is stated that, in its examinations during 1873, the Society of Arts will include Floriculture, Fruit and Vegetable Culture. The programme will be issued as soon as possible. It will not, we understand, differ materially from that for the present year. The papers for the elementary examination will be supplied as usual.

— OWING to the late excessive rainfall, the Trent, the Derwent, the Soar, and other streams in the Midland counties, have overflowed their banks, and vast tracts of land are now inundated. Autumnal cultivation, which otherwise would now be vigorously carried on, has been entirely suspended in the lowlands, which in some places present the appearance of a vast lake.

— COLLECTORS of Orchids still continue to realise fair prices for what they send to this country. At a sale at Stevens' the other day, upwards of £500 was received for five hundred lots. Among these were *Cattleya aurea*, said to be a finer kind than even the beautiful *C. Dowiana*; *Cattleya chocoensis* and another called *gigas* or *imperialis*; a large-flowered variety of *Odontoglossum vexillarium*; the beautiful *Masdevallia chimaera*; a new species of *Pescatorea*, and many other kinds better known but not less beautiful.

— AN American paper states that the old Elm tree under which Washington took command of the armies of the United States is still standing at Cambridge, Massachusetts, with an iron railing around its ancient trunk and a granite monument beneath its branches, but is beginning to show the effects of old age. Recently one of its largest branches, measuring upwards of 30 feet in length and a foot in diameter, fell to the ground. The venerable tree must, therefore, soon disappear with other relics of the revolutionary period.

— THE Lord Mayor, in furtherance of the object of enabling working men to become the owners of the Alexandra Park property, has issued a circular to the citizens of London and the large employers of labour, requesting them to attend a public meeting at the Mansion House on Monday, the 4th of November, at four o'clock in the afternoon, to take the matter into consideration. His lordship has also invited the working-men to meet at the Mansion House on the evening of the same day, at seven o'clock, in order that they may express their opinions on the subject, and the Lady Mayoress has fixed the 6th of November, at eleven o'clock, for a meeting of ladies on the same subject.

— THE collection of Orchids in the Royal Exotic Nurseries, Chelsea, is at present one of the richest in the country as regards bloom. Besides the commoner kinds and a few that are flowering out of season, there are numerous grand examples of the following: *Oncidium Rogersii*, with spikes nearly 4 feet in length, and loaded with bloom; *O. Euxanthima*, with equally long flower spikes, laden with laterals densely furnished with beautiful yellow flowers; both of these are grown in suspended baskets. There are also in bloom plants of *Vanda cœrulea*, some of which have produced four flower spikes, each bearing on an average about twenty blossoms; and also some excellent examples of *Cattleya exoniensis*, *labiata*, and *Domini*, which will be in excellent condition for several weeks. Perhaps the

most attractive of all is the lovely little *Sophranites grandiflora*, of which there are plants of the greatest possible beauty. Mr. Domy finds that *Cattleyas* do better with more moisture in the atmosphere than is generally given, and to facilitate this the floors under the stages are covered with sphagnum, which retains a vast amount of moisture, and gives it off in the form of vapour. The roots, however, should be kept moderately dry.

— AMONG the many fine Orchids in bloom at present in Mr. Bull's nursery, King's Road, are some good plants of the beautiful *Mesospidium vulcanicum*. This lovely little cool house Orchid is one of the prettiest and most useful of autumn-blooming plants.

— WE notice that the Alexandra Palace Company advertise Flower Shows to be held in May, June, and July, and an International Fruit Show in August, 1873. From this we may infer that the Alexandra Palace will be open to the public in May next.

— IN consequence of a schism amongst the members of the Horticultural Society of the Rhône, a new association of gardeners has been formed at Lyons, under the title of "Cercle Horticole Lyonnais." M. Jean Sisley, the well-known writer on horticultural subjects, has been elected provisional secretary of the new society.

— LOCH-HEAD PARK has been secured by the Corporation to the citizens of Aberdeen as a public recreation ground, and the laying of it out is nearly completed. Trees and shrubs of the usual description, including Conifers, are plentiful, and altogether the grounds are laid out tastefully.

— THE two new double white *Pelargoniums* recently announced in the French horticultural journals, and to which allusion has been made in our own columns, will be sent out as follows:—*P. album plenum* (raised by M. Smith) will be offered for sale by M. Boucharlat, sen., of Lyons, on the 1st of next month; *P. Aline Sisley* (raised by M. J. Sisley) will not be sent out by M. Alégatière, of Montplaisir-Lyon, until next March.

— THE vintage in France is said to be little more than one-third that of an average year, and unfortunately follows two years by no means remarkable for the abundance of their yield. From the vineyards of Argenteuil there will only be produced, it is believed, 13,500 casks, in lieu of 80,000, which is the average annual produce. In former times the number of vintagers hired in this district was annually some 8,000, but this year's vintage has been so poor, owing to the early spring frost, that some 3,000 at the most have been more than sufficient to secure the produce.

— WE have received from Mr. Atkins, of Painswick, a handful of lovely blooms of *Cyclamen hederæfolium* var. *græcum*, which is now flowering with him in great beauty. The blooms are of a bright crimson rose, shading off towards the ends of the petals into delicate pink, and are agreeably fragrant. The leaves are large and showy, their lower sides being of a rich reddish-brown, while the upper surface is of a dark shining green overspread with silvery marblings. Mr. Atkins, like ourselves, is surprised that this variety is not more grown than it is, as it is as hardy as the more common form of *C. hederæfolium*, and during the whole winter the foliage is of itself very ornamental, especially on rockwork. In addition to the variety just named, Mr. Atkins also sent a flower and leaf of *Cyclamen cilicium*, which he states is also in fine bloom with him. He has grown it for several years, and now finds it quite hardy; though by no means so showy as *C. hederæfolium* *græcum*, this is nevertheless a pretty and interesting little *Cyclamen*.

Leaf Photographs.—The *Boston Journal of Chemistry* states that these may be produced as follows:—One very simple process is this: At any druggist's get fivepence worth of bichromate of potash. Put this in a two-ounce bottle of soft water. When the solution becomes saturated (that is, the water has dissolved as much as it will) pour off some of the clear liquid into a shallow dish; on this float a piece of ordinary writing paper till it is thoroughly and evenly moistened. Let it become nearly dry *in the dark*. It should be of a bright yellow. On this put the leaf; under it a piece of soft black cloth, and several sheets of newspaper. Put these between two pieces of glass (all the pieces should be of the same size), and with spring clothes-pins fasten them all together. Expose to a bright sun, placing the leaf so that the rays will fall upon it as nearly perpendicular as possible. In a few minutes it will begin to turn brown; but it requires from half an hour to several hours to produce a perfect print. When it has become dark enough, take it from the frame and put it in clear water, which must be changed every few minutes till the yellow part becomes perfectly white. Sometimes the venation of the leaves will be quite distinct. By following these directions it is scarcely possible to fail, and a little practice will make perfect.

GARDEN RECIPES.

REMEDIES FOR AMERICAN BLIGHT (WOOLLY APHIS.)

TAKE half a peck of quicklime, half a pound of flowers of sulphur, and quarter of a pound of lamp-black. Mix with boiling water, so as to form a thick paint. With this, in winter, when the leaves are off, paint the branches, having first removed all loose bark. Remove the soil from the bottom of the stem to the main roots, and paint the roots as far as they are exposed. The paint should be warm when used. When it has become dry, the trees should be looked over, and all cracks and holes stopped with well-worked clay. After frost, the clay-stoppings should be dressed again, to close any cracks that may occur. Ammoniacal liquor from gas-works, a solution of soft soap, strong tobacco-water, and brine, may also be employed with success.

Or, dissolve one pound of soda in a gallon of rain-water; shake this up in a vessel with a pint of spirits of turpentine until they amalgamate; add more water to make the quantity up to ten gallons. Apply to the trees with a garden-engine or syringe having a fine rose.

Or, mix goose-grease and flowers of sulphur together in the proportion of 8 oz. of the former to 2 oz. of the latter, and apply with a paint-brush.

Coal-tar, naphtha, and linseed oil, laid on with a brush, have also been used with good effect.

REMEDY FOR THE APPLE GRUB (CARPOCAMP POMONELLA.)

One method recommended is very good as far as it goes—it is to gather the fallen fruit and destroy the grub by dipping it in boiling water; or turn pigs into the orchard to eat the fruit as it falls. But this does not reach the grubs which had left the fruit before it dropped, and there are, doubtless, many others that escape by making their exit almost immediately after the fruit reaches the ground. The remedy proposed to reach these consists of hay ropes wound round the trunks of the trees, two on each tree, one 2 or 3 feet higher than the other. This acts as a decoy, affording them retirement and shelter; they make it their hiding place in which to spin their cocoons. By carefully examining these ropes every few days during the season, large numbers of the culprits may be secured, in both caterpillar and chrysalis state, and their ranks terribly decimated. It is stated that as many as a thousand have been taken in a season, in this manner, from one tree, and where it has been thoroughly tried along with the first method referred to, good crops have invariably resulted. Pieces of old cloth and various other fabrics have been used in place of the hay ropes with very good results. Complete extermination can hardly be looked for, since with the best of management a few will probably escape; but let the fruit grower do his duty, and with the help of birds and insects which prey upon these and similar creatures, there need be little fear of their depredations becoming formidable.

At p. 592 of the first volume of THE GARDEN will be found a minute description of a wooden trap for the Apple grub, which is in use in America, and said to be very effective. It does not, however, appear to us to be as good a plan as the hay-ropes above-mentioned, which intercept all the caterpillars as they ascend the stem of the tree. The American trap, being hung on one side of the stem, can only catch those that chance to creep up on that side.

The same insect affects the Pear, and destroys large quantities of this valuable fruit every year; the remedies are the same as in the case of the Apple.

HOW TO DESTROY GOOSEBERRY CATERPILLAR.

Take one ounce of hellebore powder, and two ounces of powdered alum, dilute these first in a small quantity of water, so as to get them thoroughly mixed, then add a gallon of water. Apply the mixture to the bushes affected, either by wetting them with a syringe or waterpot on the upper surface of the leaves; the caterpillars will drop off soon after feeding upon the leaves. Hellebore powder will destroy these pests if dusted on them dry, but it cannot in this way be applied so regularly over the leaves as when diluted. The principal use of the alum is to cause it to adhere to the leaves. The price of hellebore powder is 1s. 6d. per pound, and alum 4d. One gallon would do from ten to twelve full-sized bushes; it is therefore by no

means an expensive affair. It is, however, very requisite to keep a vigilant eye over the bushes in watching their first attacks, and to apply the recipe as soon as the insects are observed.

Or, get a quantity of Elder leaves, and boil them in as much water as will cover them, until the liquor becomes quite black, then clear and cool it, and to every gallon of this liquor add one gallon of tobacco water. When the trees are quite dry lay it on with a fine rose water-pot, and in about ten minutes the caterpillars will fall off dead.

Pooley's tobacco powder, dredged over the bushes night and morning, is as good a remedy as anything; while if the earth be trodden firmly down round the stems the grubs will be unable to descend into it, and will become a more easy prey to their natural enemies.

An excellent remedy consists in a dilute solution (one part in 500) of sulphide of potassium, the infected tree being sprinkled with this substance by means of a small hand syringe. This method has been successfully used on a large scale in Southern France.

We have been informed that sprigs of Furze laid among the branches of a Gooseberry bush will effectually prevent the parent insect from depositing her eggs on the leaves. The so-called caterpillars are the larvæ of a saw-fly, known to entomologists as *Tenthredo (Nematus) grossulariæ*.

EMISSION OF LIGHT FROM FLOWERS.

THE light-emitting power is found in a higher order of the vegetable world. A young Swedish damsel, the daughter of the great Linnæus, was fond of amusing herself in the summer twilight by setting fire to the inflammable atmosphere which envelops the essential-oil glands of certain *Fraxinellæ*; one sultry summer evening, when seated in the garden, she was surprised to see luminous radiations emitted by the flowers of a group of *Nasturtiums*; and she witnessed the same spectacle on several subsequent evenings, in June and July, 1762. Several naturalists have observed the same phenomenon, and almost exclusively upon yellow or orange-coloured flowers—such as the Sunflower, Poppies, the Marigold, and the Orange-lily. Two interesting observations of such luminous flowers are thus described by Dr. Phipson:—"The Swedish naturalist, Professor Haggern, perceived, one evening, a faint flash of light dart repeatedly from a Marigold. Surprised at such an uncommon appearance, he resolved to examine it with attention; and to be assured that it was no deception, he placed a man near him, with orders to make a signal when he observed the light. They both saw it constantly at the same moment. The light was most brilliant upon Marigolds of an orange or flame colour, but scarcely visible upon pale ones. The flash was frequently seen on the same flower two or three times in quick succession, but more commonly at intervals of several minutes. When several flowers, in the same place, emitted their light together, it could be seen at a considerable distance. This phenomenon was remarked in July and August, at sunset, and for half an hour, when the sky was clear; but after a rainy day, or when the air was loaded with vapours, nothing of it was to be seen. On the 18th of June, 1857, about ten o'clock in the evening, M. Th. Fries, the well-known Swedish botanist, whilst walking along in the Botanic Garden at Upsal, remarked a group of Poppies (*Papaver orientale*), in which three or four flowers emitted little flashes of light. Forewarned as he was by a knowledge that such things had been observed by others he could not help believing that he was suffering from an optical illusion. However, the flashes continued showing themselves, from time to time, during three-quarters of an hour. M. Fries was thus forced to believe that what he saw was real. The next day, observing the same phenomenon to recur at about the same hour, he conducted to the place a person entirely ignorant that such a manifestation of light had ever been witnessed in the vegetable world; and without relating anything concerning it, he brought his companion before the group of Poppies. The latter observer was soon in raptures of astonishment and admiration. Many other persons were then led to the same spot, some of whom immediately remarked that 'the flowers were throwing out flames.'" As will be observed from the above instances, the emission of light from flowers occurs chiefly in the months of June and July, and during the twilight—between sunset and the time when full darkness sets in. In some cases these sparks or flashes have also been observed in the morning, just before sunrise. The phenomenon is always most brilliant before a thunder-storm. It is also said that some flowers always emit light at the periods of floration and fecundation; at which periods, as has lately been found, the temperature of the petals rises above the ordinary point.—*Belgravia*.

THE ARBORETUM.

FOREST FEATURES.

THE FOREST OF FONTAINEBLEAU AND ITS ANCIENT TREES.

With the over-energetic activity of Anglo-Saxons, we have pretty nearly destroyed all the grand old forests of Britain. Our cousins across the Atlantic, also animated by a super-abundant and somewhat reckless activity of an analogous kind, are pursuing the same career of devastation among the forests of the new world, without establishing any system of reparation. It has been estimated that the great forests of North America are at the present time being exterminated at the rate of more than five hundred acres a day; and already the rainfall in several districts has been seriously influenced by this wholesale destruction of the tree-vegetation of the land.

propensities of the Bourbon kings. This last object was perhaps the principal one which tended to the preservation of the extensive forests of Fontainebleau, Compiègne, and several others; but the municipal forests, of which there are many in the French territories, have been chiefly preserved as a rich source of revenue. This is the case in regard to the fine forest of Haguenau, a small town in Alsace, recently wrested from France by Prussia, which, on account of the revenue arising from its forests, is perhaps the richest small town in Europe, the revenues of that petty municipality being absolutely enormous in proportion to the population of the place.

The Romano-Celtic races of Gaul, as we have seen, have been very chary of their great woods; and, therefore, many of vast extent still exist, that of Fontainebleau being among the most remarkable. This extensive tract of ancient forest



The Charlemagne Oak.

In France, on the contrary, for the last two centuries, the great importance of the national forests, not only for timber and for firewood, but also on account of their influence on the climate, has been so deeply felt, that forestal laws and forest conservancies have been established in almost every department. Schools, also, for the scientific education of a succession of young foresters have been founded upon well-considered and really excellent principles. The causes to which this careful attention bestowed upon the forest lands may be attributed are several. First, the comparative dearth of coal throughout the country, which renders the growth of Beechwood for winter firing highly remunerative; secondly, the supply of building timber from the national resources, which, till recently, has proved nearly sufficient for ordinary use; thirdly, because the vast forest lands of the French Crown were, till the epoch of the great Revolution, deemed imperatively necessary for the gratification of the sporting

land formed for ages the favourite hunting ground of the French kings, even from Frankish and Merovingian times. It covers an area of over 40,000 English acres, the careful management of which is in accordance with the most advanced principles of forestry, as taught in the national college, established for the special instruction of young men in that important branch of knowledge. It is to this system that may be attributed the preservation of the forests of France to so great an extent, while our New Forest, Epping Forest, and others have been wasted or "jobbed" away by political intrigue, or by (so-called) manorial rights. The *tailles*, that is to say, the copse, of Fontainebleau is cut, in successive portions, once in twenty-five years, over its whole extent; the *Haute futaie*, or full-grown timber, being allowed a growth of 121 years; the trees of each section, as they attain to that age, being felled and replaced by young plants. By this regular system of successive cutting of the various sections of the domain, an

annual revenue of 600,000*f.*, or £24,000 sterling, accrues to the State.

The aspects of this forest are very various in its different sections. In one part, grand sandstone rocks crop out, reminding one of those of Tunbridge Wells. In another, lofty trees shoot up to a great height, from slightly undulating ground covered with deep, coarse grass, mingled with such wild flowers as love the shade. In another part close copses cover acre after acre, with here and there a forest track of turf leading to distant parts of the domain, which the numerous broad roads, some of them paved, do not approach.

In other places, bare and rugged, some of the ancient lords of the forest are still found, which remain as monuments to mark the ancient rendezvous of this royal hunting ground. Several of these are half-ruined Oaks of great age, forming very picturesque objects, and are evidently as old as the royal huntsmen whose names they bear. One spot is specially visited on account of the gaunt hollow trunk, and still gigantic branches of the "Oak of Clovis." At another point is the venerable, but still noble, tree known as "the Charlemagne," a forest monster which it is well worth a pilgrimage to Fontainebleau to behold. Our engraving, though a spirited sketch, conveys no idea of the real magnitude of the tree, inasmuch as it only shows about one-third of its upper branches; but it gives an excellent idea of the portion shown, and of the general aspect of that part of the forest. Other similar spots are equally distinguished by trees of venerable age, each with its appropriate legend. There are "La Reine Blanche," "Le Chêne Rouge," and several others, each forming a study worthy the pencil of an enthusiastic artist.

The depths of this ancient forest are not without their haunting spirits, devoutly believed in by the peasantry of the neighbourhood. There is, for instance, a terrible spectre, known as the Black Huntsman, the legends concerning which are of analogous character to those connected with "Herne the Hunter," of Windsor forest, whose shadowy terrors have formed excellent padding of the melo-dramatic kind to several modern novels. Some of the old cronies of Fontainebleau positively and undoubtingly assert that in their youth they have had more than glimpses of the Black Huntsman in the late twilight of autumnal evenings, and the chronicles of the time aver that this same dark spectre of the forest appeared to Henri IV. while hunting, a few days before his assassination, and warned him in mysterious words to beware of the fatal knife of Ravaillac.

These vast woods and their wild and picturesque sites have long formed a veritable artist's plaisance during the summer months, and some have actually taken up their permanent abode in the forest shades there—among them the celebrated Rosa Bonheur, who has established quite a menagerie of wild animals at her woodland retreat, which have formed the main subjects of many pictures having vistas of the forest for their backgrounds. But it is the venerable trees, the brakes of briar, the grand rocks, and the dark ravines with gurgling streams in their depths, that are the favourite and principal subjects with most of the students who pass long summers at Fontainebleau, in the enthusiastic study of landscape painting.

NOEL HUMPHREYS.

WOODLAND SCENERY IN IRELAND.

In the account of Castle Freke, which appeared in a recent number of THE GARDEN, the luxuriance and picturesque character of the Irish woods is well described. I have seen much woodland scenery, both in Scotland and in England, but except perhaps on the west coast of Scotland, and occasionally in Devonshire, none can compare with the Irish for wild variety and the tangled confusion so beautiful in nature. It is very seldom wood is of much profit in Ireland, and it can, therefore, be allowed to grow with the greater freedom; while from the soft damp climate, climbing plants—the Ivy, Honeysuckle, and Clematis—wreath themselves in tresses with admirable luxuriance. Many of the wild vines of America might be planted in Irish woods and allowed to ramble as they list. The vine is at all times delightful, from the moment the fragrant buds open, and not least lovely when its leaves are dyed with the rosy-red of autumn. I have been

also more than once struck with the brighter colour that the berries of the Holly bear in Ireland; but it may be the golden light which gives to everything it touches a deeper glow, and lends a transient charm even to those barren moors that contrast so strangely with the rich beauty of the shore of loch and coast. Spenser seems to have written the three first cantos of the "Faërie Queene" in Ireland.

Rude rymes, the which a rustick muse did weave
In savage soyle.

He came to Ireland in 1580 as secretary to Lord Grey, and in June, 1586, received a grant of 3,028 acres, with the Castle of Kilkoman, in Cork. The River Mulla, which he frequently mentions in his poems, ran through his grounds. It cannot but be that the descriptions of woodland scenery and forest which occur in the "Faërie Queene" were suggested by the native forests that still stood in Ireland at the time Spenser wrote, when a squirrel from the Giant's Causeway to the Cove of Cork need never touch the ground. Did he not think of the woods around the River Mulla when "led with delight"—

Joying to heare the birdes sweet harmony.

he praised—

The trees so straight and hy
The sayling Pine; the Cedar proud and tall;
The Vine-propp Elme, the Poplar never dry;
The builder Oake, sole king of Forrests all;
The Aspine good for staves; the Cypresse funerall.

The Laurell, meed of mightie conquerours
And poets sage, the Fire that wepeth still;
The Mirrhe sweete bleeding in the bitter wound,
The warlike Beech, the Ash for nothing ill
The fruitful Olive; and the Platane round,
The carver Holme, the Maple seldom inward sound.

Like all great poets, Spenser loved nature, and wrote tenderly—

Of lofty trees, yclad with summer's pride.

while knight and lady, dwarf and foul enchantress, rested under their branches, or journeyed beneath their shady covert.

BURNSLEY MARLAY.

PECAN NUT TREE.

(CARYA OLIVÆFORMIS.)

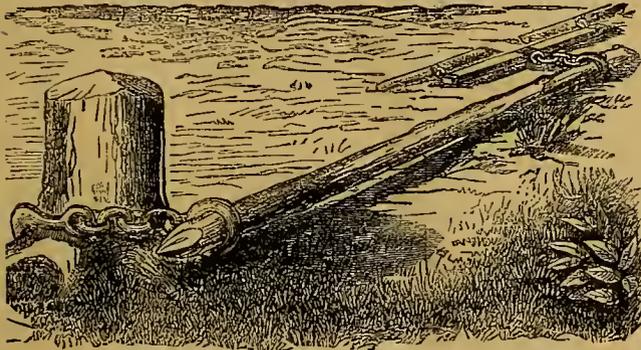
THIS fine tree, which belongs to the Walnut family, is, I believe, seldom found in our collections of forest trees, to which it would be a valuable addition, not only on account of its fruit but also for its timber. Being a tree of magnificent growth, of fine and decided foliage, it would likewise form a new and striking feature in our landscape scenery. The properties of the Hickory wood are not new to anyone who has visited America and noticed the almost spider's-web-like form of the carriage wheels used there, which are chiefly made of Hickory. All who have seen these cannot fail to have been impressed with the springy toughness and durability of this wood for carriage-building purposes. The Pecan tree is a species of Hickory, and is found in great abundance in the western forests of Texas: the mast is a great boon to hog feeders of that country, and is a valuable article of commerce, thousands of barrels of Pecan-nuts being annually exported to the large cities of the States. This nut is esteemed by many epicures as superior to the Walnut. The name *olivæformis* almost conveys the idea of what the nut is like, viz., olive-shaped, with a shell somewhat like that of the Walnut, but not so thick, and about twice the size of a Filbert. The kernel has a delicate flavour that soon makes it a special favourite with nut eaters. It is eagerly sought after in Texas for home consumption and for exportation.

Mr. Elsbury, an English merchant in Houston, who dealt largely in Pecan nuts, told me that he realised from 15 to 20 dollars per barrel, cash, for them in New York; the barrels containing about two and a half bushels. I am told that there is a species of *Carya* growing at Wollaton Park, near Nottingham, that annually produces abundance of fruit, but I cannot say if it be the Pecan or not. There are several varieties of Pecan in Texas; the best are found in the interior of the State.

PETER WALLACE.

A SIMPLE STUMP-PULLER.

THE *American Agriculturist* describes a very simple and effective stump-puller, invented by Mr. J. H. Morse, of Mobile. It consists of a hook, a chain of more or less links, as may be needed for large or small stumps, and a ring twelve inches inside diameter, made of the best and toughest iron. Mr. M. makes his ring of two-inch round-iron, and the links of one and three quarter inch iron, but as it is an axiom in mechanics that the strength of a chain cannot be greater than that of its weakest part, the ring need not be of any heavier material than the links. The hook should be flattened on the sides, at the bend, to resist as much as possible the tendency to straighten out when the strain is brought to bear upon it. To remove the stumps, if they are large and green, the roots should be partly uncovered, and the hook placed on the strongest of them. The butt-end of a lever large enough to sustain the strain is passed through the ring, a team attached to its other end, and the stump twisted out by driving round it. With two yoke of oxen, white-oak stumps, of three or four feet diameter may be taken out with ease. If the roots are very fresh and tough a man with an axe should stand close by to sever with a blow any one of the roots which offers great resistance. One acre per day can be cleared with this machine,



A simple and effective Stump-puller.

worked by two or three men and a pair of stout oxen or a heavy pair of mules. In case very large stumps are to be taken out, it would be better to leave them to the last, and bring an extra team to finish them.

THE INDOOR GARDEN.

THE FAIRFIELD SYSTEM OF GROWING ORCHIDS.

HAVING seen in THE GARDEN (p. 271) a paper on "The Cultivation of the Orchid Family," in which the following quotation occurs, I respectfully ask permission to lay before your readers a clearer statement of the facts, to which allusion is there made. "It was erroneously promulgated at one time," says your correspondent, "that ventilation should always be given at the top and only very rarely at the bottom, as it was supposed to let in the cold air and sweep out the hot air—and so it does; but if the top ventilators be kept shut, the hot air can't get out; moreover, what is of high importance, the moisture that is—let us say—manufactured by the process of perspiration on the one hand, and by evaporation on the other, is again condensed; and so we have moisture by precipitation without any extraordinary effort, such as is adopted at Fairfield, and which we have heard about as a novelty in practice, worth its weight in gold to the amateur and practical gardener!"

I began growing my Orchids in the Pine stove, as it was the only house I had in which there was a suitable temperature. I called it my "omnium gatherum," and as I found that all I had did well, I advocated that plan of growing them. I did not care to take up thumb-rule as regards their growth, so I set about reading the narratives of travel in the countries in which Orchids are found, and when I discovered anything which I thought bore upon the subject, I gave quotations in order that I might hear what cultivators of Orchids had to say in reference to them. Orchids are, as a rule, only found in tropical countries, and it is difficult to find in what way a tropical climate in the west differs from a tropical climate in the east, elevation being the same, and the country not influenced by some speciality in situa-

tion, such as a trade-wind or a mountain range. These influences individualise particular members of a family, and do not, as is the old idea, form a reason why Brazilian Orchids must be put in one house, and all East Indian sorts in another. As soon as I could learn the accidental peculiarities of each plant, I tried, by hanging them up, putting them in a cool place near a ventilator, or a warm one near the pipes, to find a range of climate in my Pine houses, which, supplemented by the usual intermediate house and fruiting house, gave me nearly all I wanted; and my *Dendrobiums*, *Vandas*, *Cattleyas*, and *Phalaenopsis* grew together. I cannot here go into a list of which are evergreen, deciduous, want long rests, or short ones; which grow in spring and summer, or in autumn and winter; those that grow only once, and those that grow twice; it must be sufficient for me to say that climate with them is every thing, and without that, the gardener may be as clever as he likes, but he can do nothing. What care they for peat or sphagnum? A block suits them as well when the atmosphere feeds them; but we never made a greater mistake than when we called them air plants. Could they form such hard horny leaves and bulbs from the product of pure air? These plants live upon the food conveyed to them by the moisture contained in the atmosphere, and we must see that it contains food; this is feeding by precipitation. What precipitation is, and how it acts, your correspondent does not seem to understand. I will try shortly to explain it; but any of your readers that are sufficiently interested in the matter to wish thoroughly to understand the theory of the fall of dew, had better seek their knowledge from the same source from which I got mine, viz., Mr. Alexander Buchan's "Handbook of Meteorology." At 32° the atmosphere can hold in suspension a quantity of water equal to the one hundred and sixtieth part of its own weight, at 59° an eightieth part, at 86° a fortieth part; thus its capacity to contain moisture is doubled with each 27° of temperature; therefore, to produce an artificial fall of dew, which I call precipitation, you have only to lower the temperature 27° and you enforce the deposit of half the moisture held in suspension, if this is done without resort to ventilation, which might provide a means of escape. The rule shows us why tropical countries are so humid, and is the explanation why the warm air that rises from the plains of India or the ocean beyond, drops rain as it is cooled in passing north over the Himalayan range.

Now let us consider the danger that our plants continually run from the contrary action of this law. How do we supply a double quantity of moisture in our houses? When the sun raises the temperature 27°, we guard against it by shading, and a good many of the Orchids suffer accordingly. I found that my Pines did, so I said they must be considered first, and in considering them I benefited most of the Orchids. I supply this moisture by means of fermenting material that is always throwing up more moisture than the atmosphere can hold, allowing us to give more ventilation accordingly, and supplying food at the same time; this fermenting bed is put out of sight under the tables. Dew is formed by the action of radiation, but your correspondent is wrong in saying that this action takes place in our houses—radiation cools the soil, which in its turn robs the air in contact with it, and thus makes it incapable of holding its moisture, which settles on the grass, and the continued process at last makes a visible quantity. All this may be, as your correspondent says, an extraordinary effort, such as is adopted at Fairfield, but I never claimed novelty of invention; it is simply a return to old practices of obtaining heat and moisture that were used of necessity before the introduction of hot water pipes and evaporating pans, which don't evaporate except the pipes are hot enough to undo all their advantage. By the use of hot water pipes this labour of filling and wheeling is avoided, but I never claimed for my system "a golden advantage" of saving in coal bills. George Stephenson called coal bottled sunshine, but it is only bottled labour; the hothouse owner buys from the coal proprietor the labour of his men, instead of paying for wheeling and filling manure, and bark or leaves; the colliers do the dirty work, and the gardeners have their houses always neat and clean, but do the plants suffer? Red spider is a crop that can be raised

with certainty. If Orchids were not half starved they would flower each year, but our Orchid growers continually say "that is a nice growth; next year it will make a flowering bulb."

I shall be glad to know how it can be explained "that by keeping the top ventilators closed and thus retaining the hot air, the manufactured perspiration and evaporation is condensed, and thus the moisture is precipitated" without an extraordinary effort. G. H.

HARDY FLOWERING SHRUBS IN POTS.

MANY of the most beautiful flowering trees and shrubs that adorn our gardens are adapted for cultivation in pots. They are not largely grown in that way, because it is only in comparatively few gardens they are wanted. Irrespective of the many purposes to which hardy trees and shrubs may be put to in the conservatory and in the decoration of apartments on festive occasions, their cultivation may be considered under two principal heads, namely, for flowering in their natural seasons, and for flowering in advance of their natural season by forcing. Let us speak of the simplest process first. I employ a considerable number of flowering trees in pots for the embellishment of an entrance court, which is richly furnished the whole year round on the plunging system. They serve a peculiar purpose; for until they were adopted it was very difficult to prevent the occurrence of a blank between the last lot of Bulbs and Alyssums and the first lot of bedding plants. But now potted Lilacs, Ribes, Rhododendrons, Weigelas, double Peaches, Plums, &c., come in well to prevent a blank, and make a delightful change from the ordinary run of spring flowers in a garden, the permanent furniture of which consists almost entirely of Hollies and Conifers, in front of which masses of Lilac, Ribes, and other such shrubs, in flower, are remarkably effective. The treatment of the trees and shrubs grown for this particular purpose is extremely simple. In the first place, it is found advisable to propagate a fresh lot every year, so as to allow of the destruction, exchange, or planting out of the trees when they become too large for the work. As a rule, none are ever potted till they have had at least two seasons' growth, and generally speaking, they are in their prime for plunging when three years old. Those that require grafting, such as double Peaches, Plums, Thorns, &c., are always purchased from a nursery; for experience has taught me that that is the cheapest way to obtain them, especially if wanted in any quantity. But all the sorts that may be grown on their own roots I raise at home, by means of cuttings put in in October or November. Let us take Ribes sanguineum for an example. After collecting all the varieties I could find at the nurseries, I selected the two most distinct and free-flowering trees I had, and cut them up into 6-inch lengths, taking out about half the buds at the lower end of the cuttings, to make clean little trees of them. In the October following I took out every alternate tree and transplanted it, leaving the remainder undisturbed. In the October following all were fit for potting, and were taken up and made ready for plunging in the following spring. In just the same way I dealt with Weigela rosea, Crataegus Pyracantha (required for its berries in autumn), Deutzia crenata, Forsythia viridissima, Viburnum plicatum, and others. I have a few fine sorts of Lilacs, which are most valuable, as I obtain an abundance of flowers on compact trees of 2 or 3 feet high. These I never grow from cuttings, but from rooted suckers, which I find make neat thrifty bushes. When wanting to increase the suckers from the stools of any choice sorts, I heap some rich light soil round the base of a tree in the borders, and in the course of the season suckers rise in abundance, which may be taken off with plenty of roots in autumn. As to the management of these trees, I scarcely prune them at all, except to keep them neat and compact in shape. They are potted in October or November, in rather stiff soil, say half strong loam, and the other half rotten manure and leaf-mould. A fourth or fifth part of clay, in lumps, is good in the mixture. Poor material will never do, as the trees suffer quite enough by being cramped in pots. As to sizes of pots, the smaller the better for convenience, but the roots must be very slightly cut back, or the trees will not flower nicely. When they have flowered, they are taken away and plunged in a sunny spot,

and have plenty of water until the end of June, after which they take care of themselves until October, when they are shaken out and repotted. Of course the double Thorns might all be grown the same way, but I have always purchased grafted plants, and cut them back rather sharply, to cause the formation of compact heads. As for Rhododendrons, we buy them so cheap that we cannot afford to propagate them, and of course they are potted in peat.

The cultivation for forcing differs from the foregoing routine in this essential particular, that the trees should be one whole growing season in pots before they are forced, or success is very uncertain. Those who want flowering trees for forcing may buy and pot in spring for forcing the following winter. As the trees will make a good growth if carefully treated, they must be put into pots large enough to allow of two seasons' growth (but be careful not to overdo it, as too large a pot does more harm than good), and it will be advisable not to shift them at all until they have flowered twice in the same pots, and then they may be cut back and repotted, or may be planted out. As in the former case, a firm lasting soil must be used. It is a capital plan to mix the crumbs from the top of a bank of clay that has been well frozen, with loam and manure, as this makes a long-lasting compound. Of course, top-dressing with sheep's droppings will be useful, and when the pots are crammed with roots manure water should be given while the trees are in active growth.

A very important matter in forcing hardy trees is to force gently: to take them from the plunge-bed out of doors direct into the forcing-pit is bad practice. At all events no one is likely to do it twice, for the way in which the flower-buds fall without opening is a caution. It is astonishing how little forcing, if judiciously applied, suffices to open out the flowers finely if the trees are strong and well managed. The double-flowering Peaches take the very first rank as conservatory trees to force early with very little heat. Not only must care be taken to avoid any excess of heat, but the trees must have full light and plenty of air, and never lack a reasonable condition of moisture at the root. The following are the best amongst hundreds of species and varieties to pot in quantities for forcing: viz., Rhododendron Nobleanum, rose; R. guttatum colorans, French white, with brown spots; R. ignescens, scarlet; R. gemmiferum, crimson, white centre; and many others. These should be bought in August or September for forcing in the ensuing spring. Azalea obtusa, A. amœna: both these are rosy purple, and most beautiful for blooming in December and January. A. viscosa floribunda, white, very sweet; Admiral de Ruyter, scarlet; A. coccinea major, scarlet; Florentine, pink and sulphur; Julius Cæsar, scarlet; Marie Dorothee, white and pink. Treat as advised for Rhododendrons. I do not include Azalea indica, but whoever wants first-class winter and spring flowers must have a few varieties of it. Berberis Darwinii makes a lovely pot tree if potted in April and taken care of all the summer. After flowering in the conservatory, the following spring it should be planted out. The Laurustinus is a charming shrub to grow in pots for the conservatory in districts where the climate is too severe to suffer it to flower out of doors. If well fed, it never becomes leggy or rusty, even if kept three years in the same pot. Viburnum plicatum is a beautiful deciduous shrub for the purpose. Amygdalus persica flore pleno is the double-flowering Peach. Of this the carnation, crimson, rose, and white varieties are the best of all trees known for flowering in pots. Cerasus japonica and C. japonica multiplex are varieties of the so-called dwarf Almond, fine trees for pot culture, and needing very little forcing. Chimonanthus grandiflorus may be worth growing in a pot. At least a dozen sorts of Crataegus are suitable for forcing. Cydonia japonica, the Japan Quince, is first-rate, and may be grown to a compact bush by judicious pinching and a little careful training. Daphne Mezereum may be easily done. Deutzias are glorious, and Jasminum nudiflorum is a gem for pot culture, easy to train and wants no forcing. I have some little compact bushes, about 2 feet high, that have been in the same pots seven years, and always flower charmingly at Christmas in a warm pit. Syringa persica, in variety. Messrs. Fraser, of Lea Bridge Nursery, have a dark blue kind, of dwarf growth, which makes the best of all the Lilacs for forcing. Weigela rosea and other

varieties are charming. They rather want coaxing than forcing; but if the bushes are compact, and the wood well ripened, they flower profusely and are delightful. When the flowering is over, take the trees into the open air in such a way as not to injure them. If bleak cold winds prevail, keep them in a cool house, well ventilated, until soft genial weather returns; then place them out, plunged to the rim, and let them have all they require to assist growth—say a fresh coat of good stuff on the top, and enough water, and all the sun and rain of the summer; but after the 1st of August do not give them one drop of water.

S. W.

CORYPHA (LIVISTONA) AUSTRALIS.

This handsome New Holland Palm ranks amongst the best of such kinds as will thrive in our greenhouses and conservatories. The trunks of this class of Palms are generally tree-like, and always unarmed. Their leaves are palmate and



Corypha (Livistona) australis.

elegant, and their aspect in all respects noble. Young plants of *C. australis* are best kept in pots or tubs until they begin to form trunks, and, owing to their slow growth and the hard character of their foliage, which is not easily injured, they are useful for purposes of temporary decoration in situations in which more tender Palms would fail. Their sturdy habits even make them eligible for setting out of doors in summer.

J. CROUCHER.

Treatment of Newly Imported Plants of *Sarracenia flava*.—The other day I noticed, in a two-light frame, young plants of this *Sarracenia* in excellent condition, at Messrs. Rollisson's, Tooting. The roots were imported early last spring. On their arrival in the nurseries, they were cut up into as many pieces as would form nice plants, and potted in either large or small sixty-sized pots, according to the size of the individual crowns. The compost used consisted of a mixture of chopped sphagnum and fibrous peat, with a very little loam, finely broken crocks, and silver sand. The plants after being potted in this spongy material, were plunged in a layer of fresh sphagnum placed in the bottom of the cold frame. Here they have remained ever since without any care beyond that of giving sprinklings of water, shading from strong sunshine, and giving air when the weather was favourable.—W.

ON GARDENING.

(Continued from p. 348.)

UNIFORMITY v. THE NATURAL STYLE IN GARDENING.

I THINK that there is an undue tendency in these days towards too much uniformity and regularity in gardening. For my own part, I like to see a flower-bed with a variety of colours and forms in it—not a great patch of scarlet, or pink, or yellow, or purple. I am looking out as I write on beds of both fashions, and to my eye the *omnium-gatherum* hap-hazard style is the more picturesque of the two. I am not sure that if I were allowed to have my own way, I would not rather encourage a style of natural wildness. Often the fairest and sweetest things come up by chance. I have, indeed, a sort of partiality for what the gardener calls "weeds." It is not easy, indeed, to determine the exact point at which the domain of "weeds" ends and that of "flowers" commences. My gardener not only calls, but treats as weeds what I regard as very beautiful flowers. Only the other day I arrested him in the process of remorselessly tearing up all the beautiful white *Convolvulus*es that were climbing up a bank and encircling the trunks of trees with the most graceful festoonery that it is possible to conceive. Nothing of Nature's sowing—nothing not artificially cultivated is held to be deserving of a place in the garden. And yet how beautiful some of these castaways are. "If they are weeds," I said, "I should like to have more such weeds." And I told him that I had seen the most beautiful cactuses growing wild, and hedge-rows of flowering aloes. If we could only import a little more of Nature into our gardens, how much more delightful they would be. Something has been done recently in this respect, by the large importation of common ferns into our garden-grounds. People go far afield to seek them in the most uncultivated places, and yet it is not long since they would have been plucked up and thrown away as weeds, because they grow wild. A great deal may be done in the way of development of species with respect to the vegetable world, in the domains both of flowers and of fruit. That glorious Rose is but a development of the wild Briar; that exquisite ripe Peach comes from the stock of the wild Almond tree.

GARDENING IN WINTER.

I have heard it said that gardening may be "all well enough in the summer, but where are you when winter comes?" Well, you are in your glass houses, if you have any,—and there are few cultivators of flowers who have not larger or smaller covered gardens of this kind. Read what good Mr. Hole says about this in his charming "Book about Roses." He tells us, that to his extreme astonishment, much thinking that he was being hoaxed, he received an invitation at Easter time to be one of the judges at a working-men's Rose show at Nottingham. He went, and he was charmed. Neither he nor any of his neighbours had a Rose in bloom; but there, in the club-room of a public-house, he found a display of Roses, cultivated by working men, that gladdened his heart. "A prettier sight, a more complete surprise of beauty, could not have presented itself, on that cold cloudy morning; and in no royal palace, no museum of rarities, no mart of gems, was there that day in all the world a table so fairly dight." Judgment delivered, he went to see the gardens of the working-men; "tiny allotments, on sunny slopes, separated by hedges or boards, in size about three to a rood." And they had their glass houses, too! "Houses!" exclaims good Mr. Hole. "Why a full-sized giant would have taken them up like a hand-glass; and even I, but a small office boy in connection with that great profession,* was unable in most of them to stand upright, and into some to enter at all. That bit of glass had been, nevertheless, as much a dream and hope and happiness to its owner as the Crystal Palace to Paxton."

We learn from this that even the humblest gardeners may have their little bits of glass, so that their cultivation of flowers may proceed even in the severest wintry weather. But this is not the only answer to the objection that gardening is "all well enough in the summer," for there is gardening all the year round for those who look understandingly at the matter. I admit that there is often an undue tendency to sacrifice everything to summer effects. But I do not call this gardening. There is no reason why you should not have a rotation of floral crops. Even those poor Nottingham weavers, as we learn from Mr. Hole, could keep up a succession of delights. "There," he writes, "to cheer the ungenial days of winter, were the Christmas Rose, the Aconite, the Laurustinus, the Golden Holly, the *Chimonanthus fragrans*, on its snug bit of southern wall, with the large yellow Jasmine near, and the winter Violets beneath. There to follow in the spring, the *Mezereon*, the Erica, the Berberis, the Snowdrop, Hepatica, Polyanthus, Crocus, and Tulip. After these the Lilac, Laburnum, Ribes, and then the Royal Rose." If these poor workmen can accomplish such results as are here described, it must be the ignorance of middle-class cultivators alone that can keep them from outdoor gardening "all the year round."

It is, indeed, this frequent change, this never-wearing variety, that is the main charm of the garden. You leave home for a little time, and when you return, lo! everything is changed. New colours, new forms, new perfumes greet you. There are fresh flowers on the stem, fresh fruit on the bough. I know few things more enjoyable than the first walk in your garden after an absence from home. Few men, who are really fond of gardening, ever care to be long away from their household gods. It is, indeed, one of the most salutary effects of a love of gardening that your

* Though not bearing upon my subject, I cannot resist giving Mr. Hole's note to this word "profession." "One of the first of many delicious stories which it was my privilege to hear Mr. Thackeray tell, was that, once upon a time, he and Mr. Higgins (Jacob Omnium) went to see a giant, and that the man at the door inquired whether they were in the business, because, if so, no charge would be made for admission."

thoughts seldom turn towards the delights of vagrancy and the charms of strange places. You may go to one of the most charming watering-places in Great Britain, or wander through the most beautiful parts of Continental Europe, but still your "thoughts untravelled fondly turn" to the little acre and a half of garden-ground, where your Pears are ripening, and your Dahlias and Asters are coming into bloom. Paterfamilias, however, often sorely against his will, yields to external pressure, and, looking over the barren waste of sand, and stunned by the clangour of brass bands, sighs for the flowers and the singing-birds he has left behind him, and is harassed by painful anxieties respecting the spoliation of his fruit during his absence. I take up, in my desultory way, the current number of *Punch*, and there is a drawing in it of a little girl leaving church with her mother. The lady says, "And now, Ethel, that you have been to church, tell me what part of the service you like best." And the child answers promptly, "This part, mamma, dear,"—meaning going home again. And there is no part of an outing that the horticultural Paterfamilias likes so well as the going home again, you may be sure.

EVILS OF TOO MUCH GLASS.

But although a "little bit of glass" is, doubtless, an immense advantage to gardeners of all degrees, I would not recommend any man to have too much of this commodity. The tendency of an excess of glass is towards luxuriousness and extravagance. If you are wealthy, and can keep a number of garden servants, you may have some for indoor and some for outdoor work; but the middle-class gardener will not dig, if he can make any excuse for pottering in the glass houses. I do not wish to speak ill of hired gardeners as a race. Like other genuine aspirants, a gardener wishes to improve himself; and if you have the misfortune to have a large extent of glass houses, outdoor gardening is tolerably certain to be neglected. I am writing as one of the middle-classes, who can afford nothing more than a permanent gardener, with an occasional help at odd times when work presses, and now and then a weeding-boy. I repeat that noblemen and gentlemen of great estate can have a whole phalanx of gardeners—can have their work done in departments as in a Government office. I do not envy these great people in the least; for I am sure they cannot enjoy their vast domains as much as I enjoy my acre and a half of flowers and vegetables. But the work done in glass houses with them does not interfere with the out-of-doors gardening as it does with me. And I would counsel men of slender means never to encumber themselves with too much glass. If they do, justice will never be done to the open-air garden. And to my mind the latter is worth all the rest. For we cannot live in our glass houses. Indeed, a little of them is more than enough, at such temperature as is often maintained; whilst, whether we are indoors or out-of-doors, the flowers of the garden may be always before us. We may walk beside them on our gravel-walks, or sit among them on our lawns, or see them from our library windows; in a word, we can have them always with us.

ROSES.

There is no doubt, I think, that if the flowers were called upon to elect a president, the Rose would be at the head of the poll, and that the election would be confirmed by our human communities.* "Every year," we are told by Mr. Hole, "this enthusiasm increases." And the reverend rosarian has given us some wonderful statistics in support of this assertion. It is truly a pleasant thing to think of this enormous increase of the cultivation of Roses. If we go on at this rate of progression, England will soon be a great garden of Roses. It is a delightful thought. They are, certainly, possessions of which one can never have too many. I am myself all for numbers. I am not able to keep pace with those rosarians who go in for the cultivation of rare and new sorts and strive to produce single Roses of the highest excellence for competition at public shows. I confess that I do not know the names of those that I have, and I do not much care, any further than to ensure a succession of flowering plants for the longest possible period of the year. When "the last Rose of summer" is gone, happily, the autumn Roses come to bless us. Mr. Paul, the great Rose grower of Waltham, tells us that, with the exception of July, he has the best display of Roses in September. It is of course an essential point in gardening—whether for beauty or for use—to keep up a constant supply of spring, summer, and autumn plants in natural profusion. Indeed, the Rose culture of the times has advanced to such perfection, that all the old practical traditions are gone, and I doubt whether either Mr. Paul of Waltham, or Mr. Keynes of Salisbury, whose garden grounds I was wont to pass twice a day when at school, more than forty years ago, will now acknowledge that the Roses of Cashmere are "the brightest the world ever gave."

SOCIAL RESULTS OF GARDENING.

There is a pleasant result of gardening about which I would say a word or two. It tends to good neighbourly feeling, by facilitating the

* Mr. Hole may object, and rightly too, perhaps, to this Republican notion, for he styles the Rose the "Queen of flowers," the "Queen of the garden," and the "Queen of beauty," which are certainly more poetical designations. There is a passage in his chapter with the latter heading, which is so illustrative of the practical view which I am taking of the general question that I cannot refrain from quoting it. "Loved by all grades and ages," he says of the Rose, "from the little village child, who wrenches it from the hedge—now in his sister's hair—to the princess who holds it in her *bouquetière*, so it may be alike enjoyed in the labourer's garden or the conservatory of the peer. Wherever it is loved, there will it display its beauty; and the best Cloth of Gold I ever saw was on a cottager's wall. It is adapted for every position and for every pocket too. The poorest may get his own briars, and beg a few buds from the rich; and men of moderate means may make or maintain a rosary at a very moderate expense. There is nothing in floriculture to be perpetuated so cheaply as a garden of Roses."

continual interchange of small kindnesses. It is so easy and so pleasant to give cuttings and seeds, and even grown plants, to one's neighbours—to give them what we have, and to receive from them what we have not. This sort of reciprocity often brings people together who, otherwise, might have lived apart for years. Much, in this way, is done by our gardeners, and we often know not whence our contributions come or whither they go. But it often happens, especially in the case of very near neighbours, whose holdings are small, and who work a good deal with their own hand, that life-long and valuable friendships spring out of such small beginnings; whilst ready-made friendships are kept alive by such kindly reciprocations. I have sometimes doubted, however, whether those who have the means at their disposal do half enough to distribute their flowers among those who have none. People in the country or in the suburbs could send nothing more welcome to their friends in our great towns than baskets of flowers. We send game, we send fruit, we send many things to our friends; but out of our abundance we rarely send flowers. I do not forget that there is a difficulty—flowers are very perishable. But with a little thought, a little care, I think that we might convey them to our friends without much deterioration on their passage. If those great ladies who say, as I have often heard them say, that they never see their Roses in bloom upon the trees or the bushes, can still have them to decorate their dinner-tables* and their drawing-rooms in London, we can send them to our sick friends at a distance. It is of the sick, indeed, that we should especially think in this case. For all who have ever suffered (and who has not?) know the cheering influence of flowers in the sick-room. I have recently seen, in one of our morning papers, an appeal to flower growers on behalf of our public hospitals. I heartily sympathize with this kindly advocacy. I have often thought how much is being done, in a quiet homely way, to mitigate the dreariness of hospital life, by opening boxes at some of the railway stations (why should we not have them at all?) for the morning papers, which have beguiled the journey of so many travellers to London, which, like the marine, have "done their duty, and are ready to do it again." But, of course, this simple machinery cannot be used for the distribution of flowers, and in this busy striving world, when every quarter of an hour is of value to a man, the difficulty in all such cases is how to do what one could wish to do. If some good sister of charity would come to me in the morning (the earlier the better), with a basket over her arm, on behalf of St. George's Hospital, or any other similar institution, I would fill it to the brim with flowers of my own cutting. There are thousands in the suburbs of London who would do the same, until our hospitals are turned into gardens.

WINDOW-GARDENING.

I wrote, in a former essay, something in favour of window-gardening. I am glad to see that it is growing and prospering under high auspices, and that Lord Shaftesbury, ever foremost in well-doing, has been promoting, with a heartiness beyond all praise, this, the almost solitary amusement of the poor Londoner that is only purifying in its effects. It has been said, and not without truth, that to place a row of flower-pots on one's window-ledges is to exclude so much air. Now I certainly would not recommend any one who can enjoy, in any other way, the beauty and perfume of flowers, to barricade his windows with flower-pots, or to festoon them with creepers. But it is much better to have these blessings, even with the drawback of which I have spoken, than not to have them at all; and if less air enters the poor man's room, what does enter it is sweeter, when it wafts the perfume of the flowers into the narrow and crowded chamber. As I am writing this by snatches, with sometimes intervals of a week, I take up a morning paper and I find a paragraph (August 5) headed "Docks and Flowers." The docks are not Dock-leaves but dockyards. A dockyard is not quite the place in which one would expect to find flowers growing. My recollections of old visits to the docks do not include even a blade of grass. But I learn from the paper, that the directors of the East and West India Docks Companies "annually promote a competition in the growth of flowers." "Their last horticultural fête," it is added, "took place last Wednesday and Thursday. The exhibitors were exclusively the servants of the company, the flowers, fruit, and vegetables having been reared in the West India Dock, where the fête was held, and where directors, officers, clerks, with their respective wives and friends, assembled in happy accord. Money prizes were given for the two most cultivated gardens, also for climbers, garden herbs, vegetables, and flowers of various descriptions." Nothing can be pleasanter than this: to think of these burly dockyard labourers, after the work of the day is done, weary of the task of lowering heavy cases into the holds of sailing vessels, or coaling steamers, or any other work that may belong to them, of which I have a general conception, derived from old reminiscences, but which I cannot very correctly describe—to think of their going at eventide to their narrow homes and cultivating their little plots of garden-ground, under what must be regarded as somewhat discouraging circumstances and conditions, is very pleasant to contemplate.

Of course this is no solitary case, even in the close vicinity of the metropolis. I speak only of its exceptional discouragements. In my own immediate neighbourhood, there was a little while ago a workman's horticultural exhibition, which I was pleased to see had been promoted by some well-known popular writers of the present day. Within a very few years, an extensive village has sprung up near a railway station; and each tenement has a little garden-ground attached to it, and each workman has, I believe, a season ticket; and when the owners of these little

* One of the pleasantest improvements of modern times is the embellishment of the dinner-table with flowers, in substitution of the old deformity of hideous joints of flesh and unseemly-looking carcasses of fowls.

houses come out into the fresh country-air after their summer-day's work, they find more delectation (at least the best of them do) in their pleasant odorous garden plots than in the reeking atmosphere of the public-house. And even when summer is over, there is the little pot-garden in the sitting-room to invite the loving care of the good man. I do not know any better antidote to gin, beer, and tobacco, than flowers and vegetables and a plot of ground in which to cultivate them. I have no objection to a pint of beer and a quiet pipe; what I mean to say is, that I like to think that a man has earned them well by an hour or two's digging in his garden.

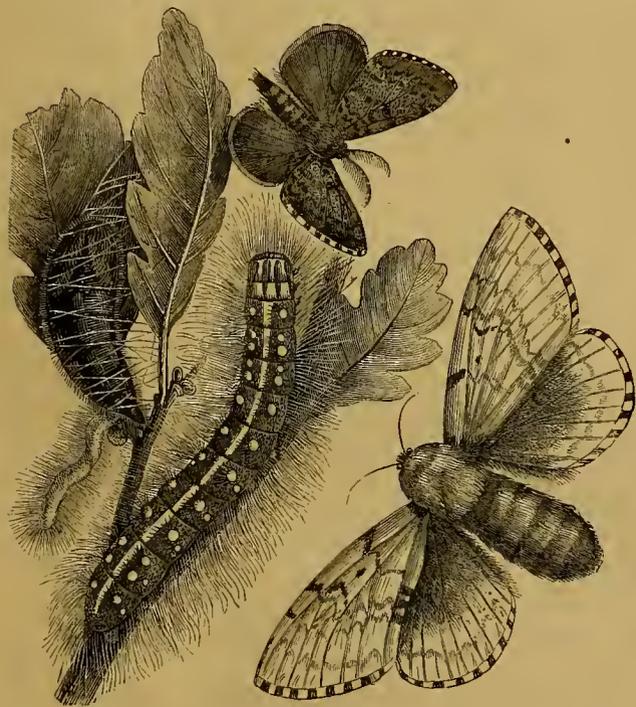
(To be continued.)

GARDEN DESTROYERS.

THE GIPSY MOTH.

(LIPARIS DISPAR).

THE insect of which we give a figure this week is much more familiar to our neighbours on the other side of the channel than to us. There it touches their purse. Here we have never heard of it occurring in such numbers as to do mischief. In France and Belgium it often wholly defoliates the fruit trees, and of course the trees, deprived of their leaves,



The Gipsy Moth.

are unable to mature their fruit. Boisduval mentions having seen the forests of Sénart and Fontainebleau some forty years ago so entirely stripped of their leaves by this caterpillar; that one would have supposed that it was the middle of winter; not finding any longer anything to eat they wandered about and at last died of starvation. Ratzeburg also quotes Preyßler and Gebhardt as recording similar occurrences in Bohemia and Thuringia in 1784. The latter says that the caterpillars wandered about and came into the houses in such numbers as to be a great plague; but he adds that the year after there was scarcely a trace of them. Their great numbers had wrought its own cure. They had eaten up everything, so that they themselves starved themselves to death. This species belongs to the family of Bombycidae, to which the silkworm also appertains, and is known in this country as the gipsy moth, in France as the zigzag moth, in Germany as the schwamm-spinner, and its scientific name is *Liparis dispar*—(the unlike *Liparis*)—in allusion to the difference in the appearance of the male and female.

The small dark-coloured individual in the woodcut is the male; the large pale one with zigzag lines across its wings is

the female. The ground colour of the wings of the former is brown or smoke coloured, the fore wings being darker than the hind; that of the female is dingy white.

The caterpillar is brownish-black, reticulated with yellowish-grey and with a lighter line of that colour down the middle of the back. There are two conspicuous tubercles on the back of each segment, which on the five first segments are blue, while those on the remaining segments are ferruginous. There are also other grey tubercles along the sides. Both bear stiff ferruginous hairs. The head is relatively very large, reticulated with grey, and marked in its midst with a yellowish triangular patch. The anterior part of the first segment has on each side an elongated tubercle, from which spring blackish hairs longer than the others, which form a kind of moustaches.

Newman gives a different description, making the tubercles on the back all blood-red, and he would appear to have taken his description from living specimens, for he says, "Duponchel has made a very erroneous description of the caterpillar, although so common. I am indebted to Mr. Thomas Hockett, a most industrious collector, for those which I have described." It is difficult to reconcile his description with that of the continental authors, who are unanimous in making the tubercles on the first five segments blue. The supposition that the difference in the descriptions might apply to different ages will not relieve us, for Boisduval expressly says that the caterpillars undergo four moults without their "dessin" being modified thereby. We have never seen the caterpillar alive, but it is possible that there may be some slight climatal difference between the larva in this country and that on the continent, or perhaps Mr. Newman may have been deceived in the caterpillar which he took for that of this moth. *Eriogaster lanestris* has a somewhat similar larva, and it has the tubercles on all the segments red. We draw the attention of our readers to the point, and invite their assistance to unravel the difficulty. The chrysalis is blackish-brown, besprinkled with small stars of ferruginous hairs. The anal extremity terminates in a broad point furnished with two bundles of small hooks. There is no cocoon, but the chrysalis is more or less surrounded with a network of extremely slight silken threads, and it is usually to be found in a curled leaf or two, or in the crevices of bark or other protected or out-of-the-way spots. It is above an inch in length. The figure of it, as well as of the moth, &c., in the accompanying woodcut, is of the size of nature.

The moth comes out about the end of July or beginning of August, and soon lays its eggs. These it deposits in patches on the trunks of trees, and covers them with down-like silky tow taken from its own body, and having very much the appearance of a patch of German tinder, whence probably the German name, Schwamm-spinner, or Sponge-spinner. This covering of the eggs is sufficiently noticeable, and supplies the best means of waging war against the insect. They are not placed high up on the tree, so that it is not difficult to go round the trees and detach these light brown amadou-like patches from the bark and burn them. This work can go on during the greatest part of the year, in autumn, winter, and spring, for the eggs are laid in August and are not hatched until the following May, passing the winter under the protection of their covering of down.

The perfect insect may often be destroyed too, for it very generally remains during the day concealed in the chinks of the bark, but persons with a tender skin should refrain from touching them with their bare fingers, for their hairs sometimes occasion a good deal of unpleasant itching, although it entails no dangerous consequences.

The larva feeds on almost every kind of tree, although it is especially by its attacks on fruit trees that it is known as injurious. We find it mentioned as found on the Poplar, the Ash, the Hazel, the Pear, the Apple, the Plum tree, the Peach, the Apricot, the Lime, the Beech, the Elm, the Oak, the Hawthorn, the Blackthorn, &c., and its geographical distribution is correspondingly wide. It is occasional in England, common in France, excessively common in Belgium, and pretty universal all the way to St. Petersburg, where it is also very common. It extends also over the south of Europe and into Algeria, where it appears nearly a month earlier than here. A. M.

The Phylloxera.—In a communication recently sent to the Académie des Sciences, it is stated that the Phylloxera is as injurious to some other fruit trees as it is to the vine, and that the Gooseberry, the Pear, the Peach, and the Cherry, are equally attacked by it. M. L. Faucon who, some time since, pointed out the only successful mode of meeting the evil, viz., by the complete and continual submersion of the roots of the vine for some time, made the following experiment to ascertain how it was transmitted. He planted a diseased vine and a healthy one at a short distance from each other, making in the soil around the roots of the healthy vine holes which he considered would attract the Phylloxera. He then set his two sons to watch, and after some time they perceived swarms of the insects leaving the diseased vine and making their way towards the healthy one. When they reached the holes which had been made, they quickly entered them, and disappeared. To corroborate this observation, M. Faucon directed his attention to a vine which had been for a long time diseased, and which had not been pruned or attended to for three years. Some of the stems of this were still comparatively untouched, and while he did not find a single insect on the parts which were already destroyed by them, he observed them making their way in numbers towards the sound portions. The result of his observations was that the wings which some of the insects possess are not used by them as a voluntary means of transport, but merely serve to support the insects in the air when they happen to be carried away by the wind, and that the wingless insects also, from their exceedingly small size, are carried about by the wind as easily as dust; but that, in a vineyard or vineyard, the Phylloxera invariably progresses from one vine to another by creeping, as he has described. The disease is spreading rapidly in the department of Provence and Vaucluse, and has also made great advances in Portugal. M. Dumas, in his report to the Academy, says: "It appears to be now well established that the Phylloxera attacks the roots of the French and the leaves of the American vines. It is desirable that the leaves of the latter should be gathered and destroyed as soon as the Phylloxera galls make their appearance on them; for although the ravages of the pest are not so serious in this case, and do not endanger the life of the plant, it will be prudent to check its extension in this way, especially as all doubts have been removed as to the identity of the insect which attacks the leaves of the American vines with that which attacks the roots of the French vines."

Kitchen Garden Pests.—I send you an insect which is eating up everything in my kitchen garden. What is it?—W. [The insect which you describe as eating up everything in the kitchen garden is one of the most destructive of the Turnip fleas. It is the *Haltica atra* of older authors—now *Phyllotreta atra*, and Curtis's *Haltica obscurella* is a variety of it. No effectual remedy known—it is recommended to be particular in burning the weeds, &c., when the ground is cleared. Lime and soot have been found to be of no use.]

THE PASSION-FLOWER.

THIS curious and beautiful flower is often supposed by those unacquainted with the history of its discovery to be an emblem of the passion of love, as its name appears to imply. Artists have unwarily lent their pencils in aid of this erroneous interpretation of its name, and we have had in our pretty gift books portraits of attractive young ladies surrounded by a garland of this plant, the title being "the Passion-flower." The tempting error which has led poets and painters and sentimental letter writers to adopt the Passion-flower as an emblem of the tender passion, is very easily shown to be an innocent blunder. The name "Passion," as is well known to all who have taken an interest in the origin of botanical names, has no reference to the passion (as it is called) of love, but to the last sufferings of Christ, "The Passion." The flower was originally named *Passiflora*, or the flower of the Passion, by the Catholic priests who followed closely in the track opened up by Columbus to the new continent of America, in order to attempt the conversion of the aborigines to the Christian faith. Many of these Catholic missionaries were men highly cultivated in all the learning of the time, and were consequently more or less naturalists. As students of nature we may imagine that they were much struck with the beauty and singular structure of this remarkable flower, which they found growing in wild luxuriance and abundance over the rocks of Hispaniola, Jamaica, and Cuba, as shown in the clever illustration by Riou; and also climbing the great trees to their tops, and hanging their beautiful foliage and blossoms in thick festoons from the branches. The structure of the flower, upon careful analysis, appeared to them a "miracle," which seemed

to foretell that these new countries were fore-destined to Christianity; for the structure which they so much admired at a first glance was found upon more careful examination to contain, as they conceived, representations of the objects most closely connected with the Crucifixion and the events which immediately preceded it. In the sharp spines which spring from the bases of the petals, and encircle the corolla in a manner so conspicuous as to attract immediate attention, they fancied they perceived a vivid representation of the "Crown of Thorns," while in the white portion of each spine, forming a wavy circle of lighter tone, and so producing a halo-like effect at about half the depth of these singular appendages they imagined a nimbus or glory shining through the thorny crown. Taken alone, these resemblances might have passed without much notice, but other curious analogies were perceived, which awoke at once the curiosity and enthusiasm of these devoted men of the first Christian mission to the far west. These were, first, the three black segments into which the pistil divides itself at the apex, which are not unlike three large-headed iron nails, disposed point to point, which were, of course, accepted by the excited missionaries as symbolising the three nails by which the hands and feet of Christ were secured to the cross. Again, the anthers, five in number, seemed to be pierced by their filaments, on the sharp points of which they are poised, suggesting at once the five wounds; and, in fact, at a particular stage of their development they actually resemble, on the inner side, gaping wounds, pierced by the sharp point of a spear, or those of nails. The anthers were, therefore, readily accepted as types of the wounds in the hands, feet, and side, whilst one of them, in conjunction with the triple branching of the pistil, was accepted as forming a representation of the cross. Bearing in mind these features of this singular flower, one may easily imagine that, when the missionary monks of Spain and Portugal first saw it in the new world of wonders opened up to them by the discoveries of Columbus, they might see in it a sacred miracle, calling upon them to exhibit it as such to the heathen in aid of their conversion.

Such an association of ideas might seem far-fetched and improbable did not a long chain of similar fancies lead up to it from the earliest times. The Rue, for instance, from the first ages of Christianity, was, in consequence of its having been mixed with the drink presented to Christ upon the cross, considered a sacred plant, and described as the *Herba Benedicta*, or Blessed Herb. This feeling in regard to the Rue was strengthened by its cruciform blossoms, upon the elegant structure of which the *cross fleurie* of Gothic designers was undoubtedly founded. The Rue, in consequence of these innocent and graceful fancies, was, as a sacred herb, strewn in churches on all great occasions; and also in courts of justice, as emblematic of the sacredness of justice.

Then, there is that pretty little *Silene*, with a crimson blotch on each of its petals, which, as we may imagine, soon received, in monkish nomenclature, the specific name *quinque-vulnera*, in allusion to the five wounds of Christ. To these examples may be added the superstition that the flowers of the Cabbage, Turnip, Rape, and other plants furnishing human food, had only four petals, forming a *cross*, as emblematic of the benefits they were intended to confer on mankind; and in consequence of this conviction they were named "plants of the cross." The four-petalled formation of their flowers was subsequently found convenient for the formation of a grand botanical division, so distinctly marked that modern science at once accepted the character as the leading one of a well-defined "natural order," and conferred upon it a name founded on that of the old monkish legend, namely, the *Cruciferae*.

As a hardy and beautiful garden flower the *Passiflora carulea* is not cultivated so much as it ought to be. Its hardiness, when we consider that it is a native of Brazil and the West Indies, is very curious, especially as many of the other species require the heat of the stove. There are, however, beautiful hybrids, such as *P. c. racemosa*, *P. alata-carulea*, and several others which are as hardy as *P. carulea*, and should be in every garden where there is wall-room for such profuse growers.

The Passion-flower was first introduced in 1629, the species being *P. incarnata*, as hardy as *P. carulea*, which last was not



PASSION FLOWERS AT HOME.

introduced till 1699. *P. laurifolia*, from the West Indies, and *P. minima*, from Curaçoa, were imported in 1690. Several others have been subsequently imported at different times, and among them *P. kermesina*, which is one of the handsomest of the tender kinds. This beautiful class of plants has since been found in Australia; but its representatives there are very far inferior in beauty to the American kinds. The flowers of the Passifloras are sweet-scented; and the berries of many edible, but insipid. *P. maliformis*, the sweet Calabash of the West Indies, bears a fruit the size of an Apple; it is of a yellow colour, the sweetish pulp being the edible portion. *P. quadrangularis*, sometimes called the Granadilla, bears a still larger fruit, which is often 6 inches long, and 15 in circumference. The purple pulp has a taste of sweetish acid, and is eaten with wine and sugar, like Melons. This last-named kind has been successfully grown in England, and its large berries used as table fruit, but as such it is but little esteemed. The beautiful orange-coloured fruit of the *P. carulea* is produced in great profusion in this country in favourable seasons, and in that state the plant is almost as ornamental as when in flower. There is, at the present moment, a plant of it trailing profusely over a great part of the front of a large house at St. Leonard's, which is covered with the bright, orange-coloured fruit, about the size of a pigeon's egg, and as there is still a luxuriant crop of late flowers in full bloom, the effect is very attractive.

H. N. H.

[To our correspondent's enumeration of the resemblances which the Spanish monks found in the Passiflora to Christ's Cross and Passion, we may add that they saw in the column on which the ovary is elevated the pillar to which He was bound; and to his notice of the Rue, that its common name, in some parts of England, is Herb-Grace and Ave-Grace. Mrs. Hemans describes the Passion-flower, in her "Wood-walk and Hymn," as follows:—

And hast thou seen
The Passion-flower? It grows not in the woods,
But 'midst the bright things brought from other climes.

Child.—What! the pale star-shaped flower, with purple streaks
And light-green tendrils?

Father.—Thou hast mark'd it well.
Yes! a pale, starry, dreamy-looking flower,
As from a land of spirits! To mine eye
Those faint, wan petals—colourless and yet
Not white but shadowy—with the mystic lines
(As letters of some wizard language gone)
Into their vapour-like transparence wrought,
Bear something of a strange solemnity,
Awfully lovely! And the Christian's thought
Loves in their cloudy pencilling to find
Dread symbols of his Lord's last mortal pangs
Set by God's hand—the coronal of thorns—
The cross, the wounds—with other meanings deep,
Which I will teach thee, when we meet again
That flower, the chosen for the martyr's wreath,
The Saviour's holy flower.]

Whence Come the Finest Roses?—I have but just seen THE GARDEN for August 17th, in which Mr. Baker hopes that other Rose growers will give the benefit of their experience in reference to the vexed question of Manetti stocks for Roses. I have been a Rose grower for twenty-four years: for the last seventeen I have lived here, where the soil is some 3 feet of lightest hazel loam over brick earth. My garden slopes gently to the south-west. I have no reason to complain of my success at our local Rose shows. For the last few years I have entirely discarded the Manetti stock, as, with the exception of Caroline de Sansal and one or two others, I find no Roses do really well on it in this soil. I find also, that, though some Roses will last for many years (some are in full vigour that I budded seventeen years ago) on the Dog Rose, I get the larger part of the Roses which I exhibit from plants budded on the Dog Rose of two or three years' standing, or from those on their own roots. I may add that a friend, lately deceased, who was about the most successful amateur Rose exhibitor at Norwich, depended on the Dog Rose almost entirely. I do not remember to have cut a Rose for exhibition for him (and I assisted at the arrangement of his boxes for years) from any plant that had not the Dog Rose for its stock. The soil of my late friend's garden is a deep, rich, alluvial one.—E. W. DOWELL, Dunton Vicarage, Fakenham, Norfolk.

THE FLOWER GARDEN.

AUTUMN IN THE FLOWER GARDEN.

WE may generally begin to clear the flower garden with comparative safety after the fogs have come over it in October. We have two strong inducements, and they are growing stronger every season, to clear the flower garden as early as possible; one is, that we may save the plants for future service, and the second, that we may prepare and immediately furnish the beds with winter or early spring flowers. Valuable half-hardy or tender plants cannot be considered safe in the open air beyond October; and therefore, whatever be the state of the weather or the beauty of the surface, the work of clearing gardens of such plants as are to be saved entire must be soon proceeded with. It is needful even for the safe wintering and future health of such plants as choice tricolor or zonal Pelargoniums, not only that they should escape the touch of frost or the piercing chill of cold rains or fogs, but likewise that they should make fresh roots before the dead season comes upon them. The safest mode of treating these and a host of other flower garden plants is to take them up at once, prune the roots off pretty closely, and leave a good length of top. Pot in very small pots in light sandy soil, place for a fortnight in a bottom heat of 70°, keeping the tops about 50°. In that short time the tiny pots will probably be filled with roots, and the plants should then be arranged on stages near to the glass, and kept in a temperature of from 45° to 50° throughout the winter. The new roots being close to the stems of the plants, and in a state of activity, constitute their safety. Such plants rarely die or give any trouble during winter. Again, much of the success of winter and spring gardening depends upon an early clearing. This gives time for preparing the soil, digging it deep, and, if very poor, manuring it with light well-rotted dung or fresh loam, and the careful planting of bulbs, biennials, herbaceous plants, &c. Early planting means here, as in the last case, good roots; and the plant that has a firm grip of the earth before winter is provided with the best security for holding on to life when the season of trial comes. The modern idea is that the flower garden should never be flowerless: our successions of flowering crops are to be, like our vegetables, growing in a circular line without end—growth, if possible, is to be kept abreast of decay. Besides, piecemeal destruction is distressing; it is painful to watch decay stalking through our gardens a step at a time, crushing a flower or plant or bed one after the other. Better and pleasanter far to watch the signs of the times, and when the set of the current of floral life and beauty has turned towards decay, let us promptly step in and help the elements to complete the clearance—making a clean sweep of it.

D.

A Variegated Sweet Flag.—The Sweet Flag of our swampy localities (*Acorus Calamus*) is well known, says *Hearth and Home*, for its aromatic and somewhat acrid qualities. Large quantities of its long creeping root-stocks are dug up and sold in the streets of our American cities as Flag-root, Sweet-Flag, and Calamus, and it is imported in the dried state, the roots being nicely peeled, from Europe. The plant itself is not a particularly attractive one, though it is useful in a collection of semi-aquatics to plant along the margin of a pond. The flat leaves grow 3 or 4 feet high, and the flower-stalk, which is flat and looks quite like a leaf, bears upon its edge the flowers, which of themselves are inconspicuous, and are densely crowded together upon a short spike. A few years ago a Japanese plant was introduced with the somewhat oppressive name of *Acorus japonicus foliis aureo-striatis*, but it was found to be only a striped variety of our well-known species, and instead of repeating the name just given we can say "Striped Acorus," or "Variegated Sweet Flag," and be just as correct. We have had a plant for several years, and though in our dry sandy soil it does not attain the height it would in a more congenial locality, it makes a very satisfactory border plant. The leaf is equally divided between cream colour—it is not golden—and green, the line of demarcation distinct, and the contrast very strong and pleasing. Mr. Taplin sent us a fine specimen a few days ago, which shows that it flourishes better in the grounds of Mr. Such at South Amboy, than it does with us. Mr. Taplin writes that he finds it most useful as an edging to beds of large growing plants cultivated for the beauty of their foliage.

ROSES ON THEIR OWN ROOTS.

THESE are but the dream of many Rose cultivators; they long for them, but cannot get them. The Briar stock is voted a bore, the Manetti a nuisance, and, however low the latter are budded, there are times when the stock will assert itself and make rank growth, to the discomfiture of the cultivator. But dwarf Roses on their own roots are by no means so unattainable as some imagine. One of the most extensive as well as the most successful of the many Rose cultivators in the midland districts gathers all his best show flowers from plants on their own roots, raised by himself; and those who have seen his Roses must admit they are marvellously fine. Now, it may be stated at the outset that there is one great advantage in having Roses on their own roots that will at once commend itself to cultivators, and that is the fact that they will stand exposure to hard weather better than worked Roses. This has been repeatedly proved during the hard winters of the past ten years. In each instance of the occurrence of severe weather, the budded Roses were to a great extent cut down to the junction of the scion with the stock, and utterly killed; on the other hand, Roses on their own roots, though all the wood above ground was cut back, broke up from the roots in the following spring, and soon made good bushy plants. As a rule, purchasers of Roses look for strong plants, and hold in light estimation the compact little plants on their own roots sometimes met with in nurseries, and pass them by as too small. To secure Roses on their own roots, cuttings of the hard ripened wood of the summer's growth should be taken at the end of October or beginning of November, and inserted in lines in a spare piece of ground that is somewhat light and open, and if of a sandy nature so much the better. Each sort should be kept by itself, and planted about 3 inches apart in the lines, the lines being about a foot apart. A large proportion of these can scarcely fail to root; if transplanted in the spring, they make fine young plants and bloom well the following summer. In cold moist localities, it would be well to give the cuttings some shelter during the winter. I once knew a Rose cultivator living in a cold and bleak district of the West Riding of Yorkshire, who, finding some protection for his cuttings necessary, hit upon the following plan, and was highly successful with it. An open piece of well-drained ground was selected, and a narrow strip prepared by mixing with the soil sand and leaf-mould. In this, cuttings taken at the end of October were inserted in circular patches, in lengths of about 3 inches, cut off close under a joint, and having one or two eyes out of the ground when planted. A good watering was given in the morning on a dry day, just at the time of planting the cuttings, and then each circular group had placed over it damaged vitriol bottles or carboys, as they are sometimes termed. The bottoms of these, being broken, were cut away so that they could stand level, and when placed over the cuttings the bungholes were

left open. During severe frost, or when raining, the bungholes were stopped up, but it was found to act injuriously, as the exclusion of the air bred damp. Beyond keeping the cuttings clean from decaying leaves, no other attention was required; and in the month of May many of the plants were found to be well rooted, when they were transplanted into beds made of good soil, and soon grew into capital plants. This is a simple mode, by which almost anyone can obtain a supply of Roses on their own roots, without much expense or trouble.—*Quo.*

Bees and Salvias.—As I grew this year a large bed of *Salvia patens* for seed, I have frequently watched with interest the way in which bees operated upon the flowers. This *Salvia* is but a shy seeder until September, when it seeds sufficiently freely to need

looking over about every other day. During the fine days, of which we had so many in that month, I found both domestic and humble bees to frequent the *Salvia* blooms in large numbers, and I have come to the conclusion that to these I have been more indebted for the fruitfulness of my flowers than to anything else. Any one who has watched bees when operating on flowers of *Antirrhinum* will have observed that their weight, when applied to the lower lip of the flower, opens the throat. This mode of operation is, however, owing probably to the narrowness of the throat, never adopted in the case of the *Salvia*. On every flower, without exception, of this plant, a small hole is pierced just beyond the edge of the green calyx, on the right hand side from the stem. I have never seen a single hole on the left hand side. Then, on some of the blooms, the top part of the calyx is pierced also, and most singular was it to notice that, whilst those insects that pierced the sides invariably kept to that part, those that pierced the green calyx also as regularly paid their devoirs in those spots only. However to neither of these gatherers (and they were by far the largest proportion) am I indebted for hybridisation; as still closer observation revealed here and there little industrious fellows heavily laden with pollen, and these affected only the under extremity of the top lip, just where the pollen is to be found; and to the efforts of these do



Spray of Passion-flower.

I ascribe whatsoever of seed crop I may have had to gather.—A. D.

Solanum jasminoides.—Does this plant, to which reference has recently been made, as an interesting half-hardy climber, occur in two varieties? The plant commonly grown has, I think, pure white flowers. But on referring to several popular horticultural dictionaries, I find the colour given as pale purple, or rosy-purple. Maund's "Botanic Garden" gives a figure in which the colour is pale rosy-purple. Is it possible that there are two species in cultivation with similar names?—SANCHE.

Exotic Water Lilies in the Open Air.—Your statement in THE GARDEN, of October the 5th, prompts me to say that the culture of exotic Water Lilies, &c., in the open air, by means of warm water, is not without parallel in this country. I have recently visited the gardens of R. Fothergill, Esq., at Aberdare, near Merthyr Tydvil, and while traversing the margin of a small lake, I was charmed with the sight of numbers of beautiful pink Nymphaea flowers, lying like stars on the surface of the water. Mr. Floud, the gardener, informed me that the small lake in which these Lilies are growing, is supplied by the hot water (which would otherwise flow away unutilized) from the adjoining extensive works of the Aberdare Iron Company.—W. WALTERS, *Nurseries, King's Awe, Hereford.*—[Cases similar to that here recorded are not uncommon. By running hot water pipes through a small pond, Messrs. Weeks & Co., some years ago, flowered the Royal Water Lily successfully in the open air in their nursery in the King's Road, Chelsea.]

THE FRUIT GARDEN.

THE VINE IN THE OPEN AIR.

(Continued from p. 353.)

PLANTING.

THE planting of the vine is an important operation, upon which most of the after results depend. It naturally divides itself into time, manner, and place. For out of door Grapes April or May is doubtless the best planting season. The roots of the vine seem particularly sensitive to injury when left in a dormant state after being disturbed. Having lost their hold of the earth, they appear to hold on to life itself but loosely. Hence, if vines out of doors are moved, say in November, a majority of their roots will perish during the winter or early spring. No motion of the top takes place to summon them to action, and paralysis, disease, or death ensues.

On the contrary, if the vines are planted just as the buds are breaking, the growing buds excite the roots at once; they plunge into the fresh earth with scarcely a pause, no roots die or even appear to suffer from being disturbed, and there is scarcely any interruption in the progress of the plant. Some even recommend later planting, waiting till the young shoots are a foot or more in length. I have nothing to say against this in the planting of vines under glass, where perspiration can be checked, and shading and other expedients adopted with more or less ease. But the risk of a check out of doors is too great to advise such advanced planting, and I believe the time I have mentioned to be upon the whole the best. As to the manner of planting, it can hardly be too carefully performed. Presuming that the border was thoroughly prepared in the autumn, it will only be needful to remove from six to nine inches of the surface soil from an area according to the strength of the plants and the probable length of their roots. Then turn out the plants, if in a pot, and unwind and spread out the roots evenly and level in the border. This will need a good deal of care, as, if possible, not one root or rootlet must be broken. If the plants are taken up out of the open ground, the "deploying" of the roots will prove an easier matter, as they will not have assumed that corkscrew form, so difficult to deal with, and so inevitable to plants grown in pots. Some are so desirous to avoid this matting of the roots, that they grow their young vines in open baskets, which the roots can run through in all directions into the surrounding soil. The old growers found their method of planting the vine so injurious to the roots, many of them breaking off sharp like pipes of glass, that they preferred to plant cuttings to root on the spot so that they might never be disturbed afterwards. Having unwound and distributed the roots, cover them with about six inches of soil of the same quality that the border is made of, and then apply an upper layer of, say four inches of cocoa-nut fibre refuse or half-rotted stable manure. This is to remain on for the season, to nourish the roots and keep the moisture in, and the wind and sun out. It is well to water the roots as soon as the planting is completed, as it causes the earth to lie closer to them than any other mode of compression, and also provides them with sufficient moisture to start with. If warm water at a temperature of 80° can be used it will quicken as well as moisten the roots, and thus shorten the delay of growth incident to the planting. The shorter the rest of the roots, the safer and better for the well-being of the vines. As soon as the roots enter the new soil freely the plants are safe, and assume their normal conditions of growth. As to the distance at which vines should be planted, that depends on a variety of circumstances. For upright plants in the open air, after the manner of a French vineyard, three feet apart is a useful distance. As ground cordons on espalier rails from nine to twelve feet long, they should be from three to four feet apart. On high walls with vines on the extension system, from six feet to ten feet apart, with one or more temporary plants between, to occupy the space during the growth of the permanent plants. The distance of the bearing shoots from each other may range from six to twenty-four inches. Thus the distance of planting brings us to the matter of training, concerning which there has been considerable controversy at various times, though perhaps no plant of equal flexibility and length has upon the whole been less artistically or gracefully trained.

THE TRAINING OF THE VINE.

A few well-known types have been adopted and adhered to with amazing pertinacity. There is the bush or birchbroom for vineyards, cordons in the open ground and on walls, or rods short and long, vertical or horizontal, spurred or unspurred, and with the spur of any variety of length. Then again we have had the fan and zigzag style, and oftener than either no style in particular. But, upon the whole, there has been very little originality in device and few successful attempts to mould the

flexible vine into forms of grace and beauty. Very seldom even has it graced arches, run along vandykes, formed pendants, mounted a pillar, made a spiral column, or formed a standard of weeping luxuriance and beauty. And yet, unlike most other fruit trees, the vine can be trained into almost any form without fettering its management or interrupting its fruitfulness. Especially is this true of the vine under glass, and yet there, as a rule, it grows up straight from base to summit of rafter in thousands of vineries throughout the land, as if no other route were possible.

Out of doors we have less choice of modes of training. We must keep close to wall or roof, or pretty near to the ground, for the sake of warmth. But there might be tasteful training even in the furnishing of vineyards in the open. The vines could be bent into quadrants, semi-circles, or circles, wound into spirals, curved into lines of beauty, and heads of more than Grecian elegance. Again, a series of arches in front of a high wall would have a charming effect, the foliage of the vines and the graceful bunches never looking so rich as when seen enwreathed over our heads. A series of vandykes with intermediate pendants of fruit and leaves hanging loosely, driven and swaying with every passing breeze, would give a wealth of ornament that no other fruit tree could form. And then endless variety could be secured on roofs and walls by simply changing the lines of the long flexible vine branches. Instead of the usual straight up and down monotonous methods, the vine could be made to flow, as it were, and meander on our walls and roofs, and curve round chimneys at its own sweet will, thus relieving the bald deformity, and worse, of cottage and dwelling house architecture, by a touch of nature that would please every eye and satisfy the taste of the veriest utilitarian at the same time; for the Grape vine is almost unique in this, that it continues equally fruitful under any and every mode of training.

CHASSELAS.

(To be continued.)

PRUNING VINES WHILST THE LEAVES ARE GREEN.

VINES are not generally pruned until the leaves fade; but they may be pruned any time after the wood is thoroughly browned and hardened and the buds perfectly developed, even though the leaves be green. This is a point of some importance, inasmuch as the sooner we can prune the sooner the plants can be induced to start. For instance, let us suppose we have a lot of pot vines of the first year's growth from eyes, that the canes are ripe in August, though the leaves may be green, that they are then pruned and rested till November, and then started for an early crop—it would do away with the necessity of growing the vines on for two years before fruiting, and save about half the trouble and expense in growing pot vines. We know, for example, that in mild autumns the leaves will continue on trees, and remain green until a sharp frost occurs, which brings them down almost immediately, yet we do not observe any bad effects on the crops the following year. It is, of course, pretty generally known, too, that a vine rod may be stripped of its leaves while it is yet green, and forced to break its permanent buds and bear fruit the same year, but this is different from the early pruning plan of which I am speaking. In the former case the vines are never allowed to go to rest; while in the latter they are forced into repose by arresting the circulation of the sap while it is yet active, or stopping the general functions of the plants. If, in the adoption of this practice, it is found that no injurious effects follow to the general well-being of the subject or the fruit crop, it will prove that after a certain time the leaves in no way benefit the fruit buds for the next crop, and the advantages practically would be considerable where time and accommodation is an object. That this view of the matter is probably correct, is, I think, borne out to some extent by the following case: About three years ago I wished to root out a house of black Hamburg vines, that I might add another compartment to our late house. The vines, though old, were in good heart, and for a year or two before had ripened their crop about the beginning of June, and later. Being anxious to get another crop off them, and still have time to plant young vines and fill the house with wood the same year, I ventured to prune soon after the Grapes were cut—this would be about the beginning or middle of August, and, though the wood was hard and thoroughly matured, the leaves were still green and vigorous. The vines were started the beginning of November, and the crop was ripe by the middle of April. The fruit was in every respect equal to the crop of the previous year, which was a fine one, both as regards weight and finish for the time of the year, and all was cut and cleared off by the middle of May, and the house planted with vines from eyes which bore a crop of fruit the year following. This season, on the 25th of September, I shortened back and cut the green leaves off a number of vigorous and perfectly ripened young pot vines, which I hope to start in November.

S.

Lime as a Dressing for Vine Borders.—Is lime or lime rubbish a good top-dressing for Vines? or is plaster of Paris? When should either be applied and forked in?—R. S. [Lime rubbish is a good dressing for Vines. A sixth portion or so of it is a capital constituent of Vine borders. Top dressings of lime rubbish are also useful in keeping the surface porous, and the roots will often rise among it, and doubtless also feed upon it. The more plaster in the rubbish the better. The roots hug such pieces closely, and no doubt extract some food out of the hair used to bind the plaster. But the chief use of lime rubbish is no doubt mechanical. It keeps the earth porous for the free growth of the roots, the exit of water, and the inlet of air. I have had no experience of plaster of Paris. When made into cement and broken to pieces the mechanical effects would doubtless be similar, but more durable than those of lime rubbish. The roots cluster around it in a similar manner, but whether for moisture or food, or because it is hard, it is impossible to say. Either way, I should greatly prefer lime rubbish for Vines to plaster of Paris. Now, and for the next two months, is the best season to apply it. Spread it over the surface, and point it in with a fork as deeply as the roots will permit. If the roots are already on the surface, then mix the rubbish with equal parts of decomposed night-soil and nice turfy loam, and apply the compost six inches thick all over the Vine border. Merely scratch the old surface with a fork in the process, to allow the new and the old soils to intermix a little.—D. T. F.]

Fruit Growing in Michigan.—The wonders of that fruit belt along the western shore of Lake Michigan, seem never to end. A correspondent of the *American Horticulturist* says, "To-day I have gone through the sixty acres of Peach orchard belonging to Mr. Dyckman. This orchard is a splendid one—160 trees to the acre, and the estimated crop this year is 10,000 baskets! I have also visited the fruit farm of Mr. Bidwell on the Lake shore. This little farm of 12 acres is only four years from the stump; yet the produce of Grapes last year was 7,000 lbs., and this year it will probably exceed 15,000 lbs. He also expects to pick nearly 500 baskets of Peaches, having 600 trees just coming into bearing. His vineyard of 5,000 Grapes embraces all the choicest varieties. Of Pears he has 600 trees, some of them loaded with fruit. Plenty of berries of all kinds. On a farm of 80 acres, owned by Mr. Bailey, are about 20 acres devoted to Apple orchards. In one of these orchards of 200 trees, of 12 years' standing, there were gathered last year over 1,800 bushels, an average of nearly 10 bushels to the tree!"

Ground Cordon Pear Trees.—Mr. Fowler, the gardener at the Imperial Hotel, Malvern, made a plantation of these three years ago, and every season since they have borne heavy crops of unusually fine fruit. Mr. Fowler, who has a capital collection of fruit trees in various forms, is delighted with these simply-trained cordons.—VIATOR.

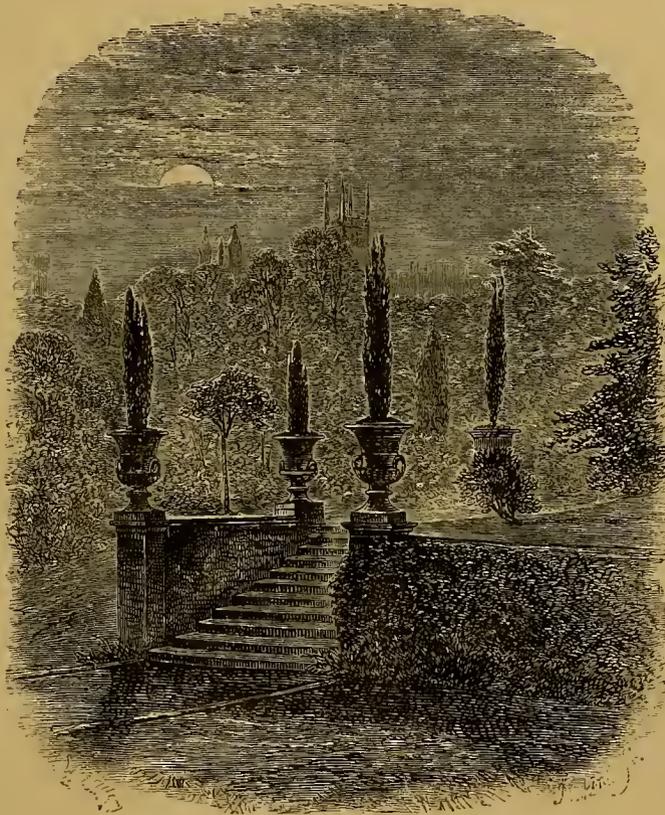
The Best Apples for Ornamental Planting.—In reply to a correspondent who seeks information on this point, let me strongly advise him to plant some of the red-cheeked Cider Apples, which for weeks past have looked so brilliant in the Cider counties. In Worcester, I believe Apples of this class are grouped under the name of "Bromley Apples." Their effect in the distance is most brilliant.—VIATOR.

Pine Apple.—*Ananassa sativa* has only a recent claim to this name, which was originally bestowed upon the fruit of *Pinus sylvestris*, the "Pine-apple tree" of old writers. The *Ananassa* took the name from the resemblance of the fruit to a fir cone, aided, perhaps, by a belief that it also was the produce of a tree. Parkinson speaks of the "West Indian delicious pines" as being "like to a cone of the Pine tree, which we call a Pine-apple for the forme;" and adds, "the Spaniards and Portugalls call it pinas, from the likeness, and so doe most countries, following that name."

GARDENS BY MOONLIGHT.

In the planning of gardens, night effects ought to be considered as well as daylight ones, for almost any kind of combination, when seen in the full brilliancy of bright sunshine, looks luxuriant and beautiful, but in the more dusky splendour of moonlight, often does not present outlines of sufficiently definite form to be seen with equal advantage in less perfect light. More definite outlines are required for night effect; and the trees or other objects intended to define themselves strikingly against the soft light of the moon should be of compact and solid character, such as, in trees, that of the *Arborvitæ* or the *Cypress* as objects presenting vertical lines, or the *Cedar* for picturesque lights and shades of horizontal tendency; while the artificial forms of architecture, especially the terraces and their adjuncts, of Italian gardens, are always fine moonlight objects; for even when not of the highest artistic merit, which is but too seldom the case, they necessarily create

broad masses of deep shadow, relieved by the vivid sparkle of bright, sharp lines of glistening, silvery light, which conceal any glaring defects of detail, if they exist, and can scarcely fail to form the nucleus of a lovely picture, in spite of bad art, bad position, or many other unfavourable conditions. The fascinating effects produced by strong light and shade cover a multitude of artistic sins, and if but a few general principles favourable to the production of broad masses of shade and sharp touches of bright light be but moderately observed, success is pretty nearly certain. The engraving which illustrates these observations exhibits a few of the features alluded to as being favourable to moonlight effects. The flight of steps leading to a terrace is well calculated to cast the broad and deep shadows which are necessary, and to create the opportunity for sharp and telling lines of light of horizontal character, while the small *Irish Yews* or *Arborvitæ*, in the vases, furnish dark vertical masses which form the necessary contrasts. Both sets of lines are extremely valuable, in contradistinction to the ir-



Terrace Garden Scene by Moonlight.

regular forms of the general foliage; and if there be but sufficient space between these objects in the foreground and the more distant masses of ordinary shrubs and trees, the effect is nearly always charming; for a soft night mist often forms a gossamer veil about the lower part of the distant objects and conceals the more prosaic features of their position, imparting an aspect of soft and pleasing mystery to the garden landscape by moonlight.

Painters and poets revel in the description of such scenes. Gustave Doré, in his night-scenes, makes his thousand-turreted castles and weirdly unreal forests seem *possibilities* at all events of the imagination, by the glamour of silvery moonlight in which he bathes their wildest forms by the magic of his pencil. Milton surpasses the ordinary splendour of his own majestic verse when he describes the first moon that shed its silver light upon the first pair, in *Paradise*; and Byron, in his drama of "Manfred," makes the half-mad student-magician utter an exclamation of such superlative beauty, when he looks from his laboratory by night, and perceives the rising moon

among the Alpine peaks, that any attempt to emulate the eloquent beauty of those few words is for ever hopeless. The haggard student exclaims:—

The stars are forth, the moon above the tops
Of the snow-shining mountains—Beautiful!

This has the golden ring of true poetic inspiration, and is imitable. But lesser bards have yet sung well their sonnets to the moon. A little known, but yet true poet, Ernest Jones, thus discourses in very pleasing verse of the enchanting effects of moonlight, exclaiming:—

What makes the trees so golden?
What decks the mountain side,
Like a veil of silver folden
Round the white brow of a bride?
She works, with touch ethereal,
By changes strange to see,
The Cypress, so funereal
To a lightsome fairy tree.
Along the corn-field dances,
Brings bloom upon the sheaf,
From tree to tree she glances,
And touches leaf by leaf.

Such effects as these, which the poet sees and sings, and the painter imitates by the magic of his brush, should be kept in view by every young landscape gardener when he is planning his glades and groves that are to be. He should bear in mind that the garden he is creating may be even more attractive on soft summer nights, in the placid moonlight, than in the gorgeous brightness of the midday sun, and should prepare, with all the cunning of his art, certain points of view for the express reception of the silver "glimpses of the moon." Working with such an ideal in view, there can be no doubt that many beautiful combinations might be achieved, which would never be developed without such a stimulus in the direction of the more subtle and poetical branches of the exquisite art of horticulture, which, notwithstanding great recent progress, is still, comparatively speaking, in its infancy. FLOS.

MARKET GARDENING FOR THE SUPPLY OF PARIS.

BY A PARIS MARKET GARDENER.

(Continued from p. 336.)

It is evident to everybody that the crops which we have just described may be more or less abundant, more or less good in quality, and more or less valuable according to the demand and public requirements of the day: the great fluctuation in prices imposes on us an absolute silence on the subject. We must also add to the list of things sold, 222 cubic yards of spent hotbed material which must be got rid of.

We have seen by the preceding account that the establishment has already cost

	£	s.	d.
In the plant, implements, &c.	1040	0	0
To this we must add two sheds for the frames, and the store-house for the vegetables	96	0	0
Total	£1136	0	0

These erections are usually the property of the tenant. As for the yearly expenses we have also seen that

	£	s.	d.
The employés cost	86	16	8
Keep of the horse	44	0	0
Repairs of harness, shoeing, and veterinary surgeon	8	0	0
Repairs of the cart	4	0	0
Rent, taxes, insurance and accidental expenses	100	0	0
Board, lodging, &c., of the employés	264	0	0
Repair of the frames and replacing broken clothes	20	0	0
Coal for the steam-engine	8	0	0
Repairs, &c., of the pump	4	0	0
Cost of seeds, and straw for tyings	5	8	4
Punnets for Tomatoes and Corn-salad	24	0	0
Manure, altogether	100	0	0
Total of yearly expenses	£668	5	0

The dwelling-house is a building of one storey, containing an underground cellar, a parlour, a dining-room, a bed-room, and apartments for the domestics. Few market gardeners have a parlour, but all the rest is indispensable. Some market gardeners make a speciality of some particular branch of cultivation, because they have a superior knowledge of it, and because the results not only indemnify them for the pains they take with the kind of vegetable which they have adopted, but also bring them in a considerable income. Of course every one who engages in gardening has a perfect right to choose his own mode of cultivation. In every case the craft supports him who is master of it, and that is the chief thing. When the ground is enclosed by walls, Grapes, Peaches, and Apricots may be grown on them either for market or the use of the household.

DISTRIBUTION OF THE WORK.

The head of the establishment absents himself as seldom as possible; his presence is necessary to direct and supervise the operations, and in these he almost always takes a part himself. Both he and those of the workmen who are specially engaged in working the garden rise regularly at five o'clock in summer; however certain operations sometimes require that they should get up between half-past three and four, and even occasionally that they should have to remain up all night. When they have to rise at these unusual hours, or stay up all night, the necessary repose is taken during the heat of the following day. The mistress rises between one and two o'clock in the morning, according to the distance from the market, to which one of the men and a girl accompany her. They all ride in the cart laden with the produce for the market. The man's business is to drive the cart, to unload the vegetables, and to bring back a load of manure from the stables, which supply it by yearly or monthly contract. The mistress remains by the unloaded vegetables and makes her sale; the girl carries in a back-basket the produce sold to the carts of the retail dealers, which are stationed at a certain distance, until the whole are disposed of. Of course these exertions demand an early breakfast, which is made on bread brought with them, and other materials furnished by the refreshment houses in the neighbourhood of the market. Without entering into particulars we may say, without fear of being contradicted, that the market gardeners feed their workmen well; as they know it is demanded by the rough work and exceptional fatigue of their business. The other employés who do not go to market, breakfast at six o'clock; in general this consists of bread and about half a pint of wine. The second meal comes on at nine o'clock, when the whole family meet. Immediately afterwards the women and the man who went to the market take a nap for two hours, and then go to work. The third meal takes place at two o'clock. It is immediately followed by garden work for all the men, and gathering vegetables for next day's market by all the women. This should be finished by seven o'clock, when all hands assist in packing them up, after which they sit down to the fourth meal, or supper, and then to bed. It is generally nine o'clock before master and men can take their well-earned repose.

(To be continued.)

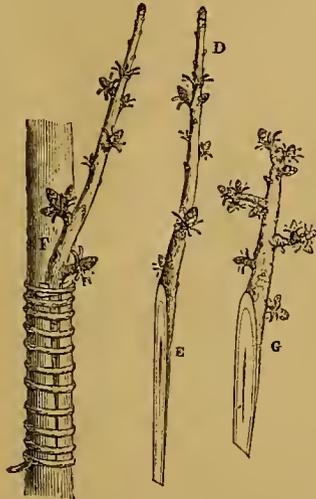
Potato Starch.—Dr. Hooker has expressed an opinion that the starch is not injured in diseased Potatoes, a statement from which I am obliged to differ. One of the most essential things in the extraction of Potato starch is that it should settle firmly at the bottom of the vessels in which it is washed. If it does not settle properly it is impossible to cleanse it from the fibrous part of the Potato, which we call pulp. The starch must be repeatedly stirred up and washed until the water comes off quite pure. Before the disease, the starch would settle quite hard at the bottom of the tubs, and you could turn them up each time and drain off all the fine pulp that was left on the surface of the starch, which, in fact, was dug out with a spade. But after the disease the specific gravity of the starch was so changed that you could do little or nothing with it. It would not settle by itself, but carried down with it the finer particles of the pulp which had passed through the sieve, and was thus full of brown specks of fibrous matter. Before disease set in the one separated from the other without the slightest trouble. I should add that the article which I manufactured was retailed at 8d. per lb., and was not used as starch, but for food as English arrowroot.—HENRY ALLNUTT, in *Chamber of Agriculture Journal*.

THE PROPAGATOR.

THE ART OF GRAFTING.

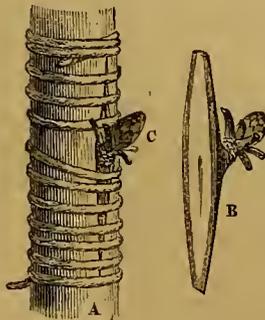
(Continued from p. 328.)

GRAFTING WITH FRUIT-BUDS.—This interesting operation, which is more especially applied to the Pear tree, has a double object. 1. The utilising of superfluous fruit-buds. 2. To render fruitful a vigorous subject which does not possess fruit-bearing qualities. About the month of August the fruit-buds of one subject which has too many are grafted on another which is deficient in them; and in the following year the buds which have been thus grafted flower and bear fruit much better than if they had remained on the parent tree. The operation should take place when the sap begins to decline: yet, as we have to do with trees of a certain age, we should take care not to graft too late. A very vigorous tree or a *gourmand* branch is best of all



Grafting with scions bearing fruit-buds.

for this kind of grafting. Fructification thus forced upon them will subdue them and bring them to bear fruit of themselves. We may thus also have several varieties of fruit on the same tree, which however is perhaps neither an advantage nor the reverse. The scions are taken by preference from those trees which are usually too heavily laden with fruit, and the fruit-buds which are destined to fall at the next pruning will answer exactly for grafting purposes. The scions are cut from the parent tree just before using them; their leaves must be removed at once and the scions themselves kept in a cool place in a vessel of water or in damp moss. The scions are generally



Grafting with a simple fruit-bud.

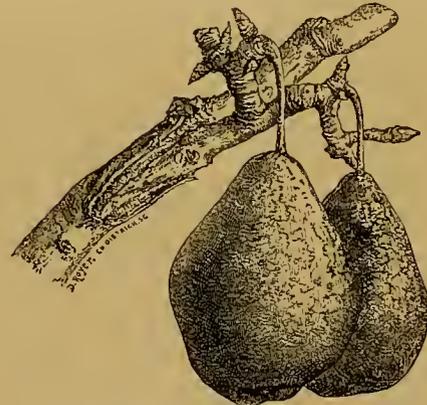
prepared in the manner already described under the heads of side-grafting with a simple branch or one with a heel, and veneer-grafting with straps. A skilful operator will know how to use them in different processes. The figure shows two scions prepared (E and G). The sloping cuts are made on the back and at the base. The stock (F) has been prepared with a T incision, and the scion (D) inserted under the raised bark. Sometimes

the bark at the head of the T is pared away to facilitate the insertion of the scion. A scion which appears rather long should not be thrown away: all that is necessary is to make the sloping cut longer, even to the extent of half the length of the scion; in this way some fruit-buds on the back of the scion may be in-laid in the incision made in the stock. Frequently the scion is an exceedingly short branch or even a simple fruit-bud. It should be cut off with a strip of bark and alburnum (B) an



Grafting with a fruiting-spur.

inch or two in length attached. Care should be taken not to remove the woody part at the base; it should be merely smoothed down so as to ensure its cohesion; it is then inserted (at C) into the T incision in the stock (A). It should be bandaged rather tightly throughout and the points of junction covered with clay, mastic, or the leaf of a tree, should any part of the tissues remain exposed. The bandage should not be removed before the fruit has set in the beginning of the following summer. Should there be any fruiting-spurs ready for grafting when the



Result of grafting with a fruit-bud.

sap is not very abundant it will be best to employ cleft-grafting, inlaying, or crown-grafting. On shoots and simple but vigorous branches success is more certain in autumn than in spring, but the best time is from July to September with side-grafting under the bark. The process of veneering with strips might also be advantageously used. The Pear-tree is best adapted for this operation. Very fertile and large-fruited varieties, such as Beurré Clairgeau, William, Colmar, d'Aremberg, &c., yield splendid crops by this method. The fruit-buds preserve their fruit-bearing properties. The figure shows the result in 1867 of a graft made in 1860, and for seven years it has constantly borne fruit. We have proved the advantage of this process during twenty years' experience of fruit-bud-grafting in our schools of fruit-culture. We are indebted for it to M. Gabriel Luizet of Ecully. He it was who first made it commonly known, although it had been invented for some time before he brought it into practice.—C. Baltet.

(To be continued.)

THE LIBRARY.

ROUND THE TABLE.*

We have already (at page 351) given an extract from this excellent little work, which is remarkably distinguished from the common run of cookery books as well in its contents as in its title. Wisely avoiding the diffuseness of such treatises as perplex the mind by offering "a hundred different ways of cooking a rabbit" with every other recipe which the compiler has been able to collect, the author of "Round the Table" has confined himself (or herself) to a limited yet sufficiently varied selection of only such modes of cooking as a fastidious taste has, after a lengthened experience, pronounced to be the very best in each case. It must not, however, be supposed that these methods involve much expense, and that the book is only suited for the households of the rich. On the contrary, the aim of the writer has been to show to what a very great extent the daily fare at a middle class table may be improved by the judicious manipulation of ordinary articles of food, which are often rendered tasteless and unwholesome by a random and reckless manner of cooking. Take, for instance, the following practical remarks on

DRIED BEANS.

It is strange that the only dried *légume* which is used to any extent, in England, should be one of the most indigestible of them all. With the rare exception of a few Haricot Beans, Peas are the only dried vegetables admitted into English cookery, of which Pea soup and Pease pudding are well known institutions. I have seen it stated as a fact, and no doubt with truth, in a standard work on matters domestic, that Lentils were not used as an article of human food in this country. Now, although these do not much differ from dried Peas in their composition, yet they contain a certain aromatic principle which, while it renders them easier of digestion, imparts to them a very agreeable taste. One of the best of thick soups, the *potage à la Conti*, is naught else but a *purée* of Lentils, and the *potage à la Condé*, another very good soup, is simply a *purée* of a particular kind of Haricot Beans. These, of which there are numerous varieties, are unquestionably the most nutritious of all dried vegetables. They only contain about eight per cent. less of starch, dextrine, and sugar than Wheat, while of azotised substances they contain over four per cent. more. But, apart from any considerations of digestibility and of nutritiveness, these dried vegetables are the foundation of many agreeable dishes, besides soups; and as variety of food is one of the great essentials of good health, many people would gladly use these things if they knew how to prepare them, and this is what I will endeavour to explain.

The first step is to boil them, and, unlike fresh vegetables, which should always be thrown into boiling water, these must be put to cook in cold water. I have seen in a cookery book (not Irish) directions to "boil Beans in cold water"—a difficult process, I imagine, to carry out. The point to be obtained is that the Beans should be thoroughly done and floury, and yet that each should remain whole, without the skin being cracked. To insure this, after having been picked out clean and washed, the Beans before being put to cook should be allowed to soak in cold water for at least twelve hours. No salt should be put into the water until they are almost done; and during the process of boiling small quantities of cold water should be put at intervals into the saucepan, and the addition of an Onion stuck with cloves, some whole pepper, and a Bay leaf will be an improvement. When dried vegetables are intended for a *purée* the process of boiling is somewhat different, for it is obviously of no consequence that the skin should split.

The principal varieties of dried Haricots are the Soissons, the Flageolet, both green and white, and the red and the speckled Haricots, all of which can be had in perfection at good Italian warehouses in town. Of Lentils there are two kinds—the small (called *à la reine*), and the large; the former are the darkest, and best adapted for *purées*, hence some cooks call the *potage à la Conti*—*potage à la reine*.

Peas are well enough known, both whole and split, and are fit for *purées* only; but there is a kind called Spanish Peas, which make a very good dish of themselves; and then there are Peas dried green, wherewith green Pea soup can be made at all times. Lastly, dried Broad Beans are to be got, and they make a very fair *purée* of its kind for a change. I now proceed to set forth the various ways of dressing these dried vegetables after they have boiled in the manner just described, taking Haricot Beans as a type.

1. *À la Maitre d'Hotel*.—Put a large piece of butter in a saucepan, and, when it is melted, drain the Beans quite dry, do not allow them to cool, put them in with pepper and salt to taste; some minced Parsley, and the juice of half a Lemon, or more, according to quantity; toss them on the fire for a few minutes, and serve.

2. *Au Lard*.—Cut up a small quantity of bacon into very small dice, put it in a saucepan on the fire, and, after the lapse of a few minutes, toss in the Beans; add pepper and salt to taste; give them a turn or two, and serve.

3. *Au Jambon*.—Use ham instead of bacon.

4. *À la Lyonnaise*.—Mince an Onion very small, and fry it in plenty of butter till it assumes a pale straw colour; then put in the Beans, with pepper and salt to taste; toss them a short time, and serve.

5. *Aux Tomates*.—Toss the Beans in a saucepan with a due quantity of well-flavoured Tomato sauce.

6. *À la Sauce Blanche*.—Melt a piece of butter in a saucepan, add a pinch of flour, then the Beans, and pepper and salt to taste; after a turn or two on the fire, stir in the yolk of an egg beaten up with the juice of half a Lemon and strained.

7. *Au Jus*.—Melt a piece of butter in a saucepan, add the Beans, moisten with as much well-flavoured beef gravy as may be necessary; season with pepper, salt, a little grated nutmeg, and a dash of tarragon vinegar; toss them for a few minutes, and serve.

8. *En Salade*.—Place the boiled Beans in a vegetable dish. Mix the following sauce: Three parts of olive oil and one of tarragon vinegar, pepper and salt *quant. suff.*, some Chervil, Parsley, and a few Chives finely minced. Pour this over the Beans, turn them over quickly, and serve. Of course this formula is only one of many, and the composition of the sauce can be varied *ad lib.* In this form the Beans may be eaten either hot or cold.

Haricot Beans, as well as Lentils, Peas, or Broad Beans, can be made into *purées* to be used as a garnish for poultry, a dish of cutlets, or a piece of stewed meat. When it is to be so used, the *purée* should be thicker than when it is intended for a soup; it should be, in fact, of the consistency of the well-known Pease pudding. A common formula to make such a *purée* is the following:—Set the pulse to boil, putting into the saucepan with it some whole pepper, a few cloves, an Onion, a head of Celery, and some Parsley; when quite done, add salt, and pass it through a hair sieve; then work into the *purée* a certain quantity of butter. If intended for soup, the *purée* should be diluted with either meat stock or vegetable stock, according as it is wished to have a soup *au gras* or *au maigre*; and the *purée* should be finished by the addition (off the fire) of the yolks of one or more eggs beaten with some milk or cream, or simply a little water.

I shall conclude this paper with a few dishes, the foundation of which is dried vegetables of various kinds; and, although they are but the bill of fare of Continental peasants, I can assert that—if the great condiment of good appetite be added to them—they can be relished even by ladies and gentlemen.

1. Boil a quantity of Haricot Beans, Lentils, or Spanish Peas; when half done strain off the water, and replace it with fresh boiling water, but in lesser quantity; add one or two Onions stuck with cloves, a good-sized piece of bacon, some powdered black pepper, and a little salt to taste. Let the whole boil till the bacon is cooked.

2. Having half-boiled some Beans as above, add in changing the water a couple of heads of Celery cut in pieces, a clove or two of Garlic, pepper and salt to taste, and a certain quantity of olive oil. Serve, over slices of stale bread, when the Haricots are done.

3. Boil some Spanish Peas; when nearly done, change the water, replacing it by boiling water, and throw in some macaroni with salt to taste. When these are done, strain off the water, turn the whole out into a basin with a large lump of butter; add pepper and grated cheese (it need not be Parmesan), or oil in which a piece of Garlic has been boiled may be used.

4. Put your Beans, Peas, or Lentils to boil with the scrag-end of a neck of mutton, or with a piece of pickled pork, or even with some sheep's or pigs' trotters only; add one or two Onions stuck with cloves, whole pepper, salt to taste, and some Celery, if you have it, and serve when done.

Some of the papers which form the chapters of this work have already appeared as articles in the *Queen* newspaper, and attracted so much attention that we have no doubt their republication in their present collected form will be very widely welcomed. They now make up, with new matter, a well-printed book of 300 pages. The appendix contains a selection of bills of fare for every month, sufficiently attractive and varied to satisfy any reasonable *gourmet*, and we can heartily recommend the volume both for the pleasing style in which it is written and for the really valuable instruction which it imparts.

* "Round the Table: Notes on Cookery and Plain Recipes, with a selection of Bills of Fare for every Month." By "The G. C." London: Horace Cox, 346, Strand, W.C. 1872.

GARDENING ROUND LONDON.

(DURING THE PRESENT WEEK.)

BY OUR SPECIAL REPORTER.

PRIVATE GARDENS.

The Flower Garden.—Hardy Sedums and Sempervivums are, in many places, being arranged so as to form edgings for spring beds. The Golden Feverfew, variegated Grasses, white and yellow variegated Arabis, purple-leaved Ajuga, variegated Queen of the Meadow, and a few other plants, are also being planted as edgings to such central masses as Iberises, both annual and perennial, Aubrietias, bedding Violas and Pansies, Alyssums, Wallflowers, principally *Cheiranthus alpinus* and *Marshallii*, and a few double ones, the common kinds being mostly confined to borders; Anemones, Sweet Williams, Mimuluses, Alpine Phloxes, different kinds of Primulas, including Polyanthuses, *Saponaria ocyroides*, Hepaticas, Saxifragas of sorts, Forget-me-Nots, and others. Besides these, many annuals are pricked out into beds, but nothing is used that does not produce a good effect in April, and that may not be conveniently removed before the middle of May. Some beds are being wholly planted with spring bulbs; but in most cases they are inserted here and there amongst flowering plants of other kinds. The bulbs commonly planted now are Snowdrops and Crocuses, both of which are put in in little groups and as edgings; Hyacinths and Tulips are planted from 8 to 10 inches apart. *Muscari botryoides* is planted in tufts, and *Narcissi*, *Jonquils*, *Ornithogalums*, and *Squills* are commonly used in little groups. *Fritillarias* and *Dog's-tooth Violets* are used in flower-beds, borders, and scattered about on grass lawns in parts that are not mown very early. On such lawns the bulbs are sometimes dibbled in; but it is best to plant, and allow them to come up year after year unchecked. Cuttings of bedding *Pelargoniums* that are well rooted are being potted singly and placed on a dry bottom, in frames or pits. *Gazanias* are increased by means of cuttings, which are inserted in boxes in a compost of leaf-mould, loam, and sand, in about equal proportions, and a layer of clean sand is laid on the surface. The boxes are placed for a short time in a spent hot-bed, and from thence removed to an airy and light situation in the greenhouse. *Dahlias* are cut down, lifted, and stored away where they can be kept dry and free from frost. Some perennials not broken up last month are now being divided and transplanted in lines, about 6 inches apart, where they will remain till spring. Such biennials as the showy hybrid Foxgloves, Sweet Williams, Rockets, &c., are transplanted to where they are to bloom; in cases where the situations in which they are intended to bloom are still occupied, they are transplanted further apart in the reserve ground. Layers from Carnations are separated, and either potted or transplanted in lines 6 inches apart, in a warm border. Pansies for blooming next spring, and now lined in beds pretty thickly, have a little belt of sand laid round the beds, so as to prevent the inroad of slugs. Evergreen shrubs are being transplanted, and deciduous trees pruned. Suckers are cut away from all kinds of trees and shrubs.

The Conservatory.—Forced Camellias are now coming nicely into bloom. Such as are in borders, though well set with flower-buds, seem late compared with their condition this time last year. Tall *Chrysanthemums* planted here and there amongst them have a fine effect. The earliest lot of the latter, both of tall and dwarf kinds, are now in bloom, a second portion is in an intermediate temperature, to bring them on a little, and the main part in as cool a house as possible. In many cases *Chrysanthemums* have not been taken indoors yet, but it is not considered advisable to keep them out longer, as there is danger of frost injuring the buds. Some of the old plants planted out in borders, and well furnished with flower buds, are lifted and potted for indoor decoration. *Bouvardias* are neatly but sparingly staked and brought into the conservatory as they come into flower. *Cyclamens* are coming nicely into bloom. Such as are in frames are syringed overhead every dry day; plenty of air is given them, and at the same time a little fire heat. Herbaceous *Calceolarias* and *Cinerarias* are repotted as they require it; they are kept in cool airy pits near the glass. *Lantanas* that were well cut back in August are again beautifully in bloom, and are taken from the forcing pit to the conservatory. *Salvias* of various kinds lately cut back are also coming in nicely. Early potted *Hyacinths*, *Tulips*, and *Narcissi* that have filled their pots with roots, and the leaves of which have commenced to push, are taken from positions where they have been plunged and are placed in an intermediate temperature on the house floor. After a few days their tops will be better able to withstand light, when the pots will be plunged in a very gentle bottom heat near the glass. *Mignonne* in 6-inch pots is thinned out to a few plants; they are generally sown in the pots they are to bloom in, for they do not transplant well. Should they require a larger pot they are shifted wholly without

breaking the balls. Heaths and *Epacris* are arranged in airy positions in the greenhouse near the glass. *Epacris* are neatly tied to light supports, as are also *Azaleas*, *Chorozemas*, *Genetyllis*, and other plants of that kind.

Forcing Pit.—Besides forced Camellias, Dutch Bulbs, and *Chrysanthemums*, hardy shrubs, such as *Lilacs*, *Dentzias*, *Azaleas*, *Rhododendrons*, *Daphne Mezereon*, *Kalmias*, &c., are being forced. *Azaleas* that have been gradually inured to early forcing are used for the earliest work. A temperature of 55° at night and 65° by day, and a position near the glass in a light house, suits them admirably. Too much heat is a great evil in *Azalea* forcing. In order to hasten a change of colour in *Aucuba* berries, they are placed in a gentle heat. Good crowns of *Lily of the Valley* are lifted and potted. When potted they are placed on shelves arranged one above the other in a warm moist house. On these shelves the pots are arranged quite close to each other, *Cocoa-nut* fibre is worked in between them, and a layer of 2 inches or so of it is also placed over them. Here they remain until they throw up leaves, when they are removed to a lighter situation. If required for cut blooms only, they are simply put into boxes in a compost of leaf-mould, loam, and a little thoroughly decayed manure and sand. *Poinsettias* are plunged in bottom heat, in order to cause them to produce larger flowers and bracts. Old plants that have been placed out of doors or in cool houses during the summer months are also similarly treated; but those required for late work are not plunged. *Thyracanthus rutilans*, *Justicias*, young plants of *Pentas carnea*, plants of *Eucharis amazonica* lately rested, *Heliotropes* from summer cuttings, *Tradescantias*, such as *Warszewiczii*, *discolor*, &c., and many other plants, are plunged in bottom heat, and enjoy a sweet healthy temperature for bringing them early into bloom.

Stoves.—The chief operations in these structures consist in washing leaves, staking and arranging, so as to give all plants an equal amount of light. Amongst flowering plants *Ixoras* are still in fine condition; indeed they may be regarded as perpetual bloomers. *Aphelandra Roeziana* is now also beautifully in bloom. Among fine-foliaged plants, one of the most conspicuous is the variegated *Pine-apple*, which, when grown near the glass, assumes a reddish hue. *Orechids* now in bloom consist of *Pleiones*, *Sophronites*, various kinds of *Cypripediums*, *Cattleyas*, *Vanda cærulea*, *Odontoglossums*, particularly *grande*, *Oncidium*, and the different varieties of *Lycaste Skinueri*. *Oncidium*, *Cattleyas*, and *Dendrobiums* are kept pretty dry at the root, but the atmosphere is still kept somewhat moist, and the temperature maintained at 68° by day and 63° by night. *Aërides*, *Vandas*, *Angræcums*, *Odontoglossums*, &c., are allowed less moisture, in short, just kept moderately damp. To *Pleiones* and other *Orchids*, blooming and growing, a good amount of moisture is always maintained.

Fruit and Vegetable Forcing Department.—Pine suckers continue to be potted as they can be obtained. They do not get much water at the root, but the atmosphere is kept moderately moist, and a day temperature of 75° and a night one of 65° to 70° is maintained. Vines to be started next month are pruned, the loose bark removed, and the wood painted over with a composition of soot, sulphur, Gishurst's compound mixed in water, and a little clay added to give the whole the consistency of paint. A mulching of litter is placed over the roots. Peaches required for starting next month are being pruned and painted with the same composition; the borders are slightly forked over, or if in pots the latter are top-dressed and, if dry, watered. The borders also get a good soaking. Forcing is commenced very slowly; in short, Peaches never submit to hard forcing. Strawberries for early forcing are taken under glass; those for succession are still left outside, and in some cases plunged, some straw being kept in readiness to cover the crowns in case of frost. *Rhubarb* is being forced by placing good roots in the Mushroom house, dark pit, or indeed anywhere where the temperature is from 55° to 60°; some light soil is worked in amongst the roots, which are sprinkled occasionally with water. *Seakale* is also being forced in the same manner. *Endive*, *Lettuces*, and *French Beans* are produced in succession in a temperature of 55°.

Hardy Fruit and Kitchen Garden Department.—Young fruit trees are lifted and transplanted, but where the trees are of a considerable size this will be deferred for a week or two until the leaves fade. *Raspberry* plantations are being made. The plants are planted in rows, a space from 4 to 6 feet being between each row, and 3 or 4 feet between the plants in the rows. The pruning of fruit bushes is proceeded with. Planting of *Cabbages* for spring use is now the principal operation in kitchen gardens. *Canliflowers* just forming flower or "curd" are lifted with a ball and planted thickly under glass, where they will receive plenty of air and be safe from frost. If the plants are not taken inside, a leaf is broken over the crown to protect them. *Endive* is tied up when fit for use. *Lettuces* and

Endive are transplanted on warm borders a foot apart each way, and seed of the former sown in cold frames. Cauliflower plants are pricked into frames pretty closely. To Onions and Carrots sown in cold frames air is given daily by taking off the sashes on favourable opportunities. Parsley, both the spring and early autumn sown, is being transplanted into lines and as vegetable quarter edges. Leeks are being transplanted, and Celery earthed up as required.

NURSERIES.

Indoor Department.—This is a good time for propagating greenhouse plants by means of cuttings; many of the finer sorts, however, are found to do better grafted than on their own roots. For this purpose the commoner species are selected for stocks, as they are almost invariably found hardier and more vigorous than the best sorts, consequently they are well suited for infusing additional vigour into the scions. Stocks for grafting on are in most cases well established in their pots before they are operated on. Epiphyllums are being grafted on Pereskia stocks, which are commonly kept in small 60-sized pots, and topped over at about 8 inches from the base; the scion is then affixed by means of cleft-grafting, and is simply tied firmly in its place with matting. The plants are then set in an intermediate pit (net under handlights or inner frames). The variegated-leaved and fine-flowering Daphnes and Oleanders are grafted both by means of side and cleft-grafting, in a pit kept rather close, but with very little artificial heat; in cleft-grafting the stocks are headed over, but in side-grafting they are left until after the scions have begun to grow. *Aralia Cookii* is increased by means of cleft-grafting, the stock being much thicker than the scion. *Ardisias* are increased by means of goodly-sized cuttings, *Lasian-dras* by pieces of the side shoots that are not showing flower, *Abutilons* by well-ripened cuttings of the young wood, and *Aphelexises* by points of shoots 4 inches or so in length. These are inserted thickly in 6-inch pots, in sandy peat with a thin layer of silver sand on the surface of the pots. Bell-glasses are placed over the cuttings, and the pots are plunged in cocoa-nut fibre in a close pit. *Cherezemas*, *Aralias*, *Cassia grandiflora*, and many other greenhouse shrubs, are increased from single eyes with a leaf attached to each. If the leaves are so long that the bell-glass cannot be conveniently placed over them, a piece is taken off their ends. The eyes are not buried in the soil, but a small piece of the wood under the eye is retained to each, and that is inserted in such a way that the eye just touches the soil. They are secured in their place by means of a small peg. Cuttings of *Rhododendrons* are inserted in pots in a close frame or pit. Tree Fern stamps found to be dead are turned out of the houses, cut up into pieces, and used as Orchid blocks, &c. Flower pots are placed over the crowns of the living plants when the houses are being watered or syringed, so as to ward off moisture, which is apt to rot the young fronds. Storing of plants for winter is being carried on. For 2 feet inwards along the paths and under the stages *Ivies*, *Geraniums*, *succulents*, and other things are arranged.

Outdoor Department.—*Dahlias* that have hitherto been in pots, are shaken out of them, the tops cut off, and the roots stored away. Hardy *Cyclamens*, in pots, are kept in sheltered positions out of doors. *Pansies* in pots are placed on narrow borders against north walls, where they will remain undisturbed until a cold frame can be got ready for them. The finer kinds of herbaceous plants are lifted and potted. Important importations of Alpine plants have lately been made. After being potted, they are set out of doors for a time, and then after a few weeks placed in a cold frame. Young fruit trees, in many cases, are being pruned, but such as are for sale are left undisturbed. Evergreen shrubs are lifted for sale, and small ones are transplanted, so as to fill the empty spaces. Fruit-tree planting has commenced.

MARKET GARDENS.

The damp weather which we have lately experienced has been most favourable for planting out vegetable crops. It is astonishing to see the quantities of Coleworts and Cabbages that have been planted out during the past week. The ground under fruit trees has been well manured, dug over, and planted. Other vacant spaces, such as those lately occupied by French Beans and Vegetable Marrows, are also manured, dug, and planted with Cabbages, which, having been sown thinly, lift with good fibrous roots. In lifting these for planting, the weakest are left, in order that they may come in useful afterwards. In some cases the plants are set a foot apart each way, and in others 15 inches. Cauliflowers are still being pricked out into frames; some pricked them out a fortnight ago, others are doing so now, and some do not intend to begin pricking out for a week yet. Where they still remain in the seed-beds, provision is made for protecting them from frost by inserting along the beds, four, five, or six rows of pegs according to their width, and about 15 inches in height. Over these mats are thrown in case of frost. The ordinary hoop and mat protections used in nurseries are also employed a good deal for the same purpose. Some Cauli-

flower seeds have been sown in the frames in which they are to remain; but these are considerably later than the others, and are being thinned the first time. Lettuces are being sown in frames without bottom heat. The soil is filled in to within a few inches of the glass, the seed is sown, and then a little soil is sifted over it. The sashes are then put on and kept tilted up a little. Endive is being tied up as it becomes ready. Some is being planted out in warm situations, such as south borders, and places well sheltered by means of hedges or fences; the plants, in most instances, are kept a foot apart each way. Lettuces are also being planted out alongside of, and in similar positions to, Endive. There are a few Cabbage Lettuces in tolerably good condition, but Cos Lettuces are not very plentiful. Spring-sown Parsley has for some time back afforded an excellent supply, and will continue in good bearing throughout the winter. In order to keep up a good succession in spring, plants from sowings made a few weeks ago are now being transplanted in sheltered places in lines 8 inches apart, and 3 or 4 inches asunder. Celery both red and white has attained great excellence this season. Some of it is being lifted for market, and the last earthing is being given to the main crops. Late crops have been earthed up a first time. Some Celery plants are now being pricked out in beds, precisely as is done in April; these are just turned out of the seed-bed. Plants from an earlier sowing were pricked out several weeks ago, about 6 inches apart each way. These two very late sowings will in time be planted out in lines 2 feet apart, and will come in useful in early spring. Young Leeks are being transplanted in rows 10 inches apart and 4 inches asunder. Coleworts in most cases are removed from between the Asparagus ridges, but some of the latest planted yet remain there. Vegetable Marrow straw is being raked off the ground, and carted to the rubbish heap, as are also the dead stems of Tomatoes. Seakale roots are being lifted, either for forcing on the premises or for selling to other growers for forcing. The roots are divested of the long rootlets, which are cut up into short pieces and laid aside for next year's production. Rhubarb roots are also being lifted for forcing; they are mostly sold to growers, who make the forcing of these and Seakale a speciality. Mushroom beds are still being made.

THE BIRMINGHAM ONION FAIR.

FAIRS, it is predicted, will soon cease to exist; but the Birmingham Onion fair has a genuine *raison d'être*, which will ensure it a prolonged, and in many respects, prosperous existence. Had Potatoes been as ancient an introduction to the British isles as Onions, we should assuredly have had Potato fairs all over the country; but Potatoes were a late introduction, after the main causes for the establishment of fairs had disappeared. Onions, on the contrary, are of the greatest antiquity among pot herbs, as a strong and savoury zest to the food of the poor, and even of the rich. The plant had been well known at a very early period, and consequently came into the category of staples which had been brought in large quantities to such fairs as occurred towards the end of September or beginning of October. The rich Warwickshire soil for miles round Birmingham is extremely favourable to Onion crops, and consequently, at the Michaelmas Fair of the great midland metropolis, Onions became a leading feature, so much so that the Michaelmas Fair has acquired the name of the Onion Fair, and is known by no other, though it presents all the usual features of ordinary fairs in large provincial towns. But, to the horticulturist, the great feature of the scene, the chief centre of attraction, is the great mass of Onions—in pyramids, in vast irregular heaps, or in great festoons, swinging from the tops of the poles that fence in the counter of the grower or the salesman. There they were, in big piles, on every side; tumbling in all directions in their abundance, and reminding you of Byron's picture of a southern vintage, where great heaps of yellow and purple grapes intermingle, and, "in Bacchanal profusion, reel to earth." Some were in loose heaps, and some in reeves or strings, the dried foliage plaited together so as to leave the bulbs in regular rows outside, like the beads of a giant necklace. In one or two instances a pole about 25 feet high was fixed in an upright position, with a great bunch of Onions at the top, and strings of them depending on all sides, so as to form a sort of tent. Another device was a kind of temple—columns, cornice, roof, all formed of Onions. In short the Onion display was the most artistically-arranged of any in the "Bull Ring," which is the focus of the fair. The Birmingham Onion Fair is not only a pretty and interesting sight, in its Onion region, but a commercial fact of some importance; the amount of money changing hands in Onion transactions being very considerable. The prices were lower than last year, which shows that in one kind of produce, at any rate, the crop has been abundant. Reeves weighing 9 lbs. realised 6s. the dozen, which last year sold as high as 8s. and 9s., showing a fall in price of from 40 to 50 per cent.

H. N. H.

THE GARDEN.

“ This is an art

Which does mend nature : change it rather : but
THE ART ITSELF IS NATURE.”—*Shakespeare.*

THE RHODODENDRON MANIA.

WE are threatened with the marring of some of our best home landscapes by the ill-judged planting of the common *Rhododendron ponticum*. The fact that it is rabbit proof, and that it grows rapidly and flowers abundantly in light soils, has caused an indiscriminate use of it both for purposes of ornament and for game cover. For the latter purpose experience has shown us that it is totally unfitted—rabbits, indeed, lie in it, and it is difficult to beat them out of the dense cover, but pheasants never enter it. This does not seem to be from any noxious properties in the plant, but because they cannot run freely between the close-growing stems, as they can under Laurels or other evergreens. For purposes of ornament it is, indeed, in most places indispensable, but it should be judiciously used. All shrubs and flowers are apt to annoy the eye if over-frequently and too closely presented to it, and this is precisely the error into which we are falling with our *ponticum*s. The monotony of a Pine forest is as noble as the monotony of a regiment of lancers, but we can hardly call the monotony of a field of Turnip's noble, or even pleasing. Apply this to our *Rhododendron*, which is neither as noble as a Pine, nor as ignoble as a Turnip, and we shall find that even as a Pine forest depends for its beauty on the varying ground which it clothes, so we must not thrust in *Rhododendrons* everywhere, and trust to the fact that a *Rhododendron* is a beautiful shrub to make the scene beautiful also. As a rule, the common *Rhododendron* is best used in what are termed middle distances. It is there you will best enjoy its lavish blossom in June, its welcome verdure in January. Do not plant it close to the eye, under the windows of your sitting-rooms, or along the terrace margins or walks. Keep those choice bits for choicer plants, for delicate shrubs, or the finer hybrid *Rhododendrons*, the foliage of which is generally much finer than that of the common type. But hang them thickly on that sunny hill-side up to the very crest, and fill that dell, into which you look down from the frail foot-bridge or solitary wood-walk high above, with rich masses, and then you will know how to enjoy your *Rhododendrons* as you never did before. You will be rewarded for your discretion a hundredfold more than those whose motto is “*Rhododendrons to the masthead,*” and who, by acting up to their motto, do their worst to vulgarise a beautiful and valuable evergreen.

SALMONICEPS.

[We wholly agree with our correspondent in his well-expressed views in regard to this matter. Stupid repetition is the bane of our gardens.]

ROSES ON THEIR OWN ROOTS.

IN spring some of your correspondents had secrets to divulge respecting the successful propagation of Roses to be grown on their own roots. One of these Rose secrets, as they are called, has not as yet been revealed, and it will most likely be some time before it is given to the horticultural world. In the meantime “*Quo*” has described (p. 369) how Roses can be propagated from cuttings in any quantity in the open air. I have tried his mode of striking them, and have been successful with both the Hybrid Perpetual and the Noisette and China sections. In severe winters they only want a little litter or dried Fern spread over the rows to preserve them. From Rose plants raised from cuttings in the open air I have many hundred yards of Rose hedges planted out, and from their being all on their own roots, I am not afraid of a severe winter killing them, as they spring up again from the ground or snow line. In forming pillar Roses, the best way of all for showing the queen of flowers in all her glory is to plant these hardy Roses to begin with. Some of the Noisette,

Bourbon, and Hybrid China sections when planted out for pillars grow rapidly, and if well trained at the beginning, form fine objects in two or three years. In the end of last October I put in about 500 cuttings, taken from pot plants of the new Hybrid Perpetual Roses of 1868, 1869, and 1870. They were inserted in pots, from six to eight cuttings being put in each pot, and the soil was made very light with red sand. They were placed at the bottom of a south wall, where they stood nearly all the winter. As the winter was so open, no covering was required until spring, when they had the advantage of a cold frame. In the beginning of June they were planted out in rows, and, in order not to disturb the young roots, each potful was planted out with the balls of earth entire. Some of these Roses showed very large and fine blooms in September last, better than any of the same varieties that flowered in the summer, particularly Baroness Rothschild, La France, Jules Margottin, Duke of Edinburgh, Madame Noman, and Boule de Neige. In striking Rose cuttings in the open air, success will be more certain if a small heel of old wood is attached to the cuttings when inserting them in the soil, which, if of a strong loamy character, should be made very friable with plenty of sand.

Welbeck Abbey.

WILLIAM TILLERY.

THE CHINA CREEPER.

AN ELEGANT DWARF STOVE ANNUAL CLIMBER.

LAST year I saw at the office of the Royal Horticultural Society a few small seedlings, which had been sent by a lady, under the (probably Bengalee) name of “*Premaviera,*” and recognised at once a favourite climber, freely used for covering trellises in Western India, and well known to Europeans by the name of “*the China Creeper.*” It is a very slender plant, with multifid filiform leaves and small bright crimson flowers, which are produced freely every morning during its flowering season. The native name in Western India is “*Camalata,*” and its botanical one *Quamoclit vulgaris* (a *Convolvulaceae* plant). Let me recommend it as an exquisite and brilliant little gem of its order. Anyone who has a friend in India could easily procure its seeds, which retain their vitality for many years. I sent some from Asseergurh in 1859, and still continue to raise a few plants from them annually. A moist stove suits the plant best; probably it would grow and flower in a small Wardiau case, and it certainly would succeed in a warm fernery or Orchid house. If it will grow in a Fern case, it cannot fail to delight those who succeed in raising it, as, independently of the brilliancy of its small flowers, its exquisitely delicate foliage and dwarf scandent habit would produce a charming effect. Compared with it, *Lygodium scandens* is strong and robust. I specially mention it as well worth trying in a Fern case, as, although it rambles freely over the Bamboo lattice work of verandahs in India, I have grown and flowered it at home on trellises 18 inches and 2 feet high. It trains itself on the slightest thread or wire, and keeps neat and compact. There is yet ample time to procure seed of it for next season. A quarter of an ounce would supply plants for many years, even if they were not allowed to ripen seed in this country, which, under favourable circumstances, they will do. Dalzell (“*Bombay Flora,*” s. 59) states that the plant is a native of Brazil. Graham (“*Bombay Plants,*” p. 129) mentions also a white-flowered variety, and gives us the English names, Cupid's Flower and Indian Forget-me-not. Its botanical synonyms are—*Ipomœa Quamoclit*, *Convolvulus pimatus*, *Flos cardinalis*; and one authority, I find, adopts its native Indian name, *Camalata*.

WASHINGTON TEASDALE.

Rosehurst, Headingley, Leeds.

AMONG shrubby plants in flower at present out of doors round London, *Veronica Andersonii* must be reckoned one of the best. A good companion to it, however, is *V. salicifolia*, which we noticed finely in bloom the other day at the Exotic Nursery, Tooting, and which, we were informed, had stood out of doors uninjured all last winter. Its flowers are white, with a pink or flesh-coloured tinge, and are produced on spikes as graceful as they are handsome.

NOTES OF THE WEEK.

— ONE of the most dismal sights conceivable has often of late presented itself in front of our office and in the adjacent streets around Covent Garden Market. We refer to the forlorn aspect presented by the vegetables and much of the fruits for the supply of this great city, and by the many hundred persons occupied with them, when saturated by a heavy downpour of cold rain. Apart from the injury to the products named, and the impossibility of conducting business in a facile manner, the inevitable injury to the health of the numbers of persons employed about Covent Garden Market is a matter which calls for public attention. More disgracefully imperfect arrangements could hardly be seen in the capital of even the most recently civilised country.

— WE have just seen, in Mr. Barr's trial grounds at Tooting, several valuable species of autumn Crocuses in flower, which, when they become more plentiful, will doubtless find a place in every collection, blooming beautifully as they do from September until November. The species alluded to are as follows:—*Crocus byzantinus*, a very distinct kind, with small but pretty flowers of a lilac-purple hue; *C. serotinus*, another distinct kind, with flowers of a clear lilac inside, the three outer divisions having paler coloured stripes; *C. longiflorus*, a charming species, with pale lilac flowers, the pistils being of a deep orange red, and the anthers a bright orange-yellow, forming altogether a beautiful contrast; and *C. sativus*, the true saffron Crocus, which, though neither new nor particularly rare, is nevertheless not met with so often as it deserves to be. Its flowers are lilac-coloured, distinctly and prettily marked with purple at the base. We also noticed a good batch of the saffron Crocus in bloom at Mr. Ware's nursery, Tottenham. In addition to the above, Mr. Barr has *C. speciosus* also still finely in bloom, and a variety, or very closely allied species, with flowers of a paler colour than those of that kind, the divisions of the flower also being much narrower than in *C. speciosus*.

— WE are informed that the Manchester Botanic Society has resolved upon holding an International Horticultural Exhibition on an extensive scale during the first week of next September, in the grounds of the Botanic Gardens at Stretford. The nobility and gentry of the city and county have signified their adherence to the project, and a large and influential committee has been formed to raise the necessary funds. The society itself heads the list with £400, and it is expected that at least £2,000 will be contributed. It will be a matter of little difficulty in such a locality to raise even a larger sum than this; the prizes may therefore be expected to be both numerous and valuable. The people of Manchester, and indeed of the county in general, are, as a rule, ardent and spirited horticulturists, as is sufficiently proved by their Whitsuntide Plant Show, which is allowed to be the finest in England. They are now determined to establish an equal distinction for their fruit and vegetables, and should the exhibition of these next September succeed agreeably to their expectations, they have arranged that it shall be an annual one.

— TO-DAY we give a list of plants now in flower round London; and among them we would more especially direct attention to the Asters, particularly to the by no means rare *A. Novæ Angliæ*, as a valuable late autumn-blooming plant. Others, too, if tastefully associated with it, would make pleasing combinations in our borders or shrubberies, and in favourable seasons would help to keep them gay all through November. Prominent among those now in bloom and not so often met with as from their ornamental characters they deserve to be, are the dwarf *A. versicolor*, which is producing a mass of variously-coloured flowers in several establishments round London; *A. Reevesii*, so profusely in bloom as to have the appearance of little Daisies thickly set on a dwarf bush; the graceful *A. turbinellus*, with delicate mauve-coloured flowers; and *A. punicus*, a tall-growing kind, which we have for several seasons noticed conspicuously in bloom at the end of October or commencement of the present month. The flowers of this last-named species are of a pale lilac-blue colour, rather large in size, and produced in huge pyramidal panicles.

— The failure of the Potato crop, says the *Lancet*, is likely to bring about an epidemic of scurvy, unless the public can be better informed of the requirements of an antiscorbutic diet. The fact, therefore, cannot be too widely made known that pease pudding, Haricot Beans, and boiled Rice, which have been suggested as substitutes for Potatoes, will not prevent the occurrence of scurvy. In the absence of the Potato—an excellent antiscorbutic—fresh green vegetables or fruits will be requisite, or the health will certainly fail, even though fresh meat be taken. Amongst the vegetable material which may be used are the various forms of Cabbage, Lettuce, Oranges, Lemons, Onions, Mustard-and-Cress, Dandelion, and Sorrel.

— WE learn that the provincial show of the Royal Horticultural Society for 1873 will be held in the Park Farm (a lovely spot), Bath. The mayor, we understand, has intimated that the guarantee fund is complete, and that special prizes, &c., are being collected.

— ONE of the handsomest trees to be seen just now in the neighbourhood of Eastbourne, is a Medlar, grafted on a Hawthorn, the foliage of which is extremely pretty, being a combination of gold, bronze, and red.

— AT a recent meeting of the Parks Committee of the Metropolitan Board of Works, a discussion was raised as to the advisability of appointing a rat-catcher for Finsbury Park. After some amusing discussion it was agreed to appoint one.

— A FEW days ago, Mr. Shepherd, of Worksop, was digging in his garden, when, to his surprise, he found buried in a nest of field mice no less than 12 pounds of broad beans, which those industrious little creatures had stored there for winter. The beans had been taken from a stack in the garden.

— THE Bradford Town Council yesterday sanctioned an expenditure of £9,800 for the purchase of a public park at Horton, in addition to a previous sum of £9,000. Of the three parks possessed by the municipality, two have been secured by the Corporation, at a total cost of £60,000.

— SO extensively is the adulteration of tea now carried on in China, that Mr. Medhurst, the British Consul at Shanghai, recently wrote that 53,000 lbs. of Willow leaves were in course of manipulation at one port alone, to be mixed with tea for shipment, at the ratio of 10 to 20 per cent.

— ONE of the best hardy plants at present in bloom in the metropolitan district is the Rock Knotweed (*Polygonum vacciniifolium*), a dwarf species, with prostrate stems, and spikes of pretty bright rose-coloured flowers, the whole plant being never more than from 3 to 6 inches in height. Several examples of it are nicely in bloom in Mr. Parker's nursery at Tooting.

— THE importation of foreign Potatoes, principally from Belgium, Germany, and Denmark, into Liverpool, is enormous; according to the "Customs Bill of Entry," no fewer than 12,298 bags arrived last week. Belgians fetch from £1 to £5 per ton, and Hamburgs £5 per ton, the quality being officially described as "good ordinary." In Germany and Belgium Potato crops are unusually heavy, and quite free, it is said, from disease.

— IN consequence of the strong representations made by a deputation of the inhabitants of the East-end of London with regard to the danger to public health from the exhalations arising from the accumulation of decaying vegetable matter and mud in the various stretches of ornamental water in Victoria Park, the First Commissioner of Works has ordered that the large lake (covering five acres) and the lower bathing lake shall undergo a thorough cleansing process, on a precisely similar plan to the one adopted some two years ago with regard to the Serpentine.

— A CORRESPONDENT of an American paper says, "I have been experimenting with Apples, and find that those packed in plaster keep much longer than in any other way. I use flour barrels, and find them preferable to Apple barrels, as they are made tighter. I first cover the bottom of the barrel with plaster, then a layer of Apples, then cover with plaster, and so on till the barrel is full; then I put the head in and drive the hoops tight. The plaster being of a cold nature, keeps the fruit at an even temperature, and being fine and dry, packs so closely as to keep the Apples air-tight." We have seen Ribston Pippins keep well, packed in this manner in perfectly dry sand.

HARDY PLANTS IN FLOWER ROUND LONDON.

Achillea tomentosa	Colchicum autumnale	Escallonia macrantha	Menziesia polifolia
Anemone japonica	byzantinum	Eschscholtzia californica	Polygonum vacciniifolium
Arbutus Unedo	Corydalis lutea	Gaura Lindheimeri	Pyrethrum Parthenium pl.
Aster bellidiflorus	Crocus byzantinus	Gentiana acaulis	Sedum Sieboldii
Chapmanii dumosus	longiflorus	Helianthus argenteus	Solanum jasminoides
Novæ Angliæ punicus	serotinus	latiflorus	Sternbergia lutea
Reevesii turbinellus	speciosus	lavigatus	Stokesia cyanca
versicolor	Dianthus dentosus	orygalis texanus	Tritoma Uvaria
Campanula Van Houttei	Echinops ruthenicus	Helichrysum bracteatum	Vernonia novæboracensis
Chrysanthemum sinense	Erica vagans	Stæchus Helleborus niger	Veronica Andersonii
Clethra tomentosa	Erigeron glaucus	Linaria purpurea	salicifolia
	Erodium Manescevi		Viburnum Tinus

THE ARBORETUM.

VARIATION OF SEX IN THE AILANTUS.

IF towards the end of autumn, from the falling of the leaves until new ones shoot, we examine a certain number of Ailantuses, we see some are loaded with fruit, while others have less, and some none at all. We remark also among those which have fruit, the greatest difference in their distribution. Some branches have a great deal, others none at all. The distribution is also very unequal. Sometimes the fruit is placed here and there in very small groups, at other times nearer together and in greater numbers, while some have all the fruit on one side. It is when these trees are without foliage that the above facts are the most obvious. An Ailantus which we have remarked for many years is now growing at Sceaux, in a garden near the establishment of Messieurs Thiebaut, Keteleer, and Robine; the latter has kindly examined the tree and sent us the following details:—"The tree is about 7 feet 4 inches in circumference at the distance of 3 feet 3 inches from the ground; the trunk is very straight, and measures up to the first branches 16 feet 3 inches to 18 feet in height. There it divides into two enormous branches, which are again subdivided gradually, first into several good-sized branches, and then into a large number of smaller ones, and finally into very small ones and twigs. One of the enormous branches has a great quantity of seeds, while the other has only a few dried remains of male or female flowers, which have not been perfected. If, as it is asserted, there is no kind of dioecious plant which cannot, and does not often, become monoecious, it seems to me most probable that the flowers were males. It must also be added that the gardener said he had remarked the same partial fructification every year." While we give the above example of the variations which the Ailantus presents in the division of sexes, we have also observed the contrary in two enormous trees which, during the length of time we have watched them, have never produced one single fruit.

HARDY TREES AND SHRUBS.

BY GEORGE GORDON, A.L.S.

THE HYRCANIAN MAPLE (*ACER HYRCANUM*).

THIS forms a fine tree from 30 to 40 feet high, with the main stem rising erect and straight, and the branches and principal shoots more or less ascending, and so regular and thickly placed on every side as to form a sort of conical head; the bark on the main stem is somewhat corky and full of narrow fissures. It is a native of the Tannian and Caucasian Mountains, whence it was first introduced in 1838, and grows freely in most soils and situations. The leaves are somewhat deeply

divided, slightly cordate at the base, on not very long footstalks, and acutely five lobed, with the three outer lobes the largest, and, with the exception of a pair of large blunt teeth or semi-lobes on each of the larger lobes, quite entire on the edges. The leaves, when full grown, are smooth and light green above, and downy beneath, particularly in the axils and along the principal ribs. The flowers are in erect, loose, branching racemes, greenish-yellow, and produced at the points of the young lateral shoots in May. The fruit or keys are rather large, with thin flat carpels terminated by broad horizontal wings, and when fully matured, quite smooth and of a light brown colour; they are produced several together, in forked, loose branching, long-stalked racemes, and ripen in September. Its synonyms are *Acer tauricum*, *caucasicum*, and *austriacum*. Length of full-sized leaf $4\frac{1}{2}$ inches, including the footstalk, which in general is not very long, the breadth being $3\frac{1}{2}$ inches.



Leaf of the Hyrcanian Maple.



Fruit or Key of the Hyrcanian Maple.

black Birch, yellow Birch, white Maple, and brown Ash were all somewhat decayed, but less than the others. Kyanizing consists in soaking the wood in a dilute solution of corrosive sublimate. The process takes its name from the inventor, John H. Kyan, a native of Dublin, who died in 1850. It has long been considered the most efficacious method of preserving the timber of ships from dry-rot.

Trees and Rain.—In Italy the clearing of the Apennines is believed to have seriously altered the climate of the Po valley, and now the African sirocco, never known to the armies of ancient Rome, breathes its hot blighting breath over the right bank of the river in the territory of Parma. The similar removal of the Pine forests near Ravenna, about twenty miles long, induced the same desolating wind, which continued until the wood had been allowed to grow again. There is no doubt that in France the removal of the old forests of the Vosges sensibly deteriorated the climate on the plains of Alsace; and it is a historic fact that the ancient destruction of the forests of the

Preservation of Wood by Kyanizing.

—At the late New England fair held at Lowell, some specimens of wood were exhibited by the proprietors of locks and canals on the Merrimac River. There were twelve different kinds of wood from the valley of the Merrimac, representing the following varieties; 1. Old growth White Pine; 2. Sapling White Pine; 3. Northern Hard Pine; 4. Spruce; 5. Hemlock; 6. Beech; 7. Black Birch; 8. Yellow Birch; 9. Rock Maple; 10. White Maple; 11. Brown Ash; 12. Poplar. They were sawed out in the summer of 1862, at the mill of Messrs. Norcross & Saunders, in Lowell. Each stick was originally about 18 feet long, and 9 inches square. Each was subsequently cut in two; one half was kyanized, and the other half retained in its natural condition. In April, 1863, the whole were set out together as posts, about one half their length in the ground, in dry gravelly soil, fully exposed to sun and weather; and they so remained until taken up, August 28th last, to be exhibited. On examination of the specimens, it appeared that the kyanized halves showed scarcely any signs of decay, while those not kyanized were all more or less decayed; four of them, namely, Rock Maple, Poplar, Hemlock, and old growth white Pine, so much so, that at the level of the surface of the ground they had come apart. The Spruce, Northern hard Pine, and Sapling Pine were also considerably decayed, but held together. The Beech,

Cevennes, under the reign of Augustus, left the large and rich tracts near the mouth of the Rhone exposed to the steady violence of the *mistral* (or north-west wind), before which the area of olive culture has retreated many leagues; the Orange is confined to a few sheltered points on the coast, and fruit trees can hardly be reared in places where they were at one time prolific. The curtailment of the rainfall is a well-known consequence of the disappearances of forests. In Egypt, where, during the French occupation, in 1798, not a drop of rain fell for 16 months, and where from time immemorial the country has been a rainless bed of sand, Mohamed Ali, by planting his millions of Fig and Orange trees, has seen his country blessed with an annual rainfall of several inches.

Oak Palings.—A correspondent of the *Field* having asked how the cleft Oak palings so common around London were made and put up, whether the cleaving was done by a lath-axe or not, and whether the wood should be green or dry, our contemporary has made inquiries on the subject, and the following is a reply from a firm engaged in the trade:—"In reply to your inquiry as to the manufacture of Oak pales, we have to inform you that it does not matter if the timber is old or green, with this exception—viz., that in cleaving old timber you must take off the whole of the sap which is decayed, whereas in new timber you may work up the whole of the stuff. The tools used are of the same pattern as those used by lath-renders, but of a larger size. The timber ought to be clean butts, from 12 in. to 14 in. through, to make good pales. The butt is split into eight or twelve pieces, according to the size; each piece has about 1½ in. taken off from the pith, and the pales are then cleft out of it. The black outside edges are then chopped off, and the pales are shaved with a common handshave, so as to make them of neater appearance."

The Banyan Tree.—Forbes, in his "Oriental Memoirs," says that a Banyan tree, named Cabbeer Burr, was nearly 2,000 feet in circumference, measured round its principal stems, but that the ground covered by its overhanging branches was considerably more extensive. The large trunks numbered 350, and the smaller ones exceeded 3,000. This tree at one time was considerably larger, a fearful storm, accompanied by a flood on the Nerbudda, having carried away a greater part of it, reducing the number of the larger trunks from 1,350 to the 350 now remaining. The original size of this colossal tree may be better conceived by remembering that 2,000 feet, its circumference when Forbes saw it, is more than one-third of a mile. It is truly one of the wonders of nature. The careful provision by which everything is made to adapt itself to the circumstances in which it is placed, is strongly exemplified in the growth of this tree; for if these branches did not throw out roots, and so form a trunk with which to support their own weight, they would tear themselves off from the parent stem.

NOTES AND QUESTIONS ON TREES AND SHRUBS.

Silvery Deodar.—The best plan for the correspondent who seeks this plant is to go through a nursery where a large number of young Deodars is grown, pick out the most silvery individuals he can find, purchase and plant them.—ARBOR.

The Fern-leaved Sumach (*Rhus glabra laciniata*).—Among the many trees and shrubs that have lately been blushing deeply, I noticed this plant, which you have rightly praised for its graceful leaves. Some plants of mine, in a fully exposed position, became a deep claret red, and were quite attractive in hue.—FLOS.

Pernettya mucronata.—The *Skimmias* are greatly praised as berry-bearing plants, and no doubt they deserve it, but they are not nearly so attractive as regards profusion or beauty of berry as this plant. It shows the berries, too, so clearly above the foliage, and sometimes, where a large number of plants are grown, a pleasing variety is observable in the colour of the berries.—V. E. R.

The Swamp Magnolia.—I have recently purchased a few plants of *Magnolia glauca*, of which I am a great admirer, and shall be glad if you will kindly tell me if it requires any special treatment.—FLOS. [About London it does well among hardy shrubs. In North America it grows freely in wet swamps with the *Sarracenia* and *Sphagnum*, and for variety sake, if nothing else, it would be well to try a plant or two in an artificial bog, or in the wet ground by pond or stream.]

The Duke of Argyle's Tea Tree (see p. 322).—The reason why *Lycium barbarum* (or more properly *L. europæum*) was called the Tea tree is somewhat differently stated by different authors. The more usual version is that a Tea plant (*Thea viridis*) was sent to the Duke of Argyle about the same time as the *Lycium*, and the labels having been accidentally changed, the latter became known as "the Duke of Argyle's Tea tree." Another account states that when the seeds were brought to England in 1759, the plants raised from them were thought by many to be those of *Thea*. A hundred years ago, much doubt prevailed regarding the plant which produced tea.

Larch Plantations.—The reddening of the Fern on the hill-sides tells us of autumn's presence, and to prepare for our planting operations. We must first choose the ground, arrange terms of compensation to the tenant, and then as soon as possible commence enclosing the ground with a strong fence. Notwithstanding a rise in the price of wire from £11 to £18, a slight increase in the cost of young Larch, and of labour, I believe plantations can now be made at a cost of £6 per acre. The past summer has been most favourable for the growth of plantations formed last autumn, and a small forest of fifty-five acres, which I inclosed and planted on my father's property, looks delightfully flourishing.—John Lloyd, jun.

THE FRUIT GARDEN.

PLANTING VINES.

ALLOW me to condemn the practice of burying any portion of the cane in planting Vines, as is often done and recommended, particularly in the case of year-old plants. It is well known to all Vine cultivators that the plant emits roots freely from any portion of the stem when it is covered with soil; hence the old practice of layering the Vine when it was desired to propagate it, and that still in vogue of covering in about two or three feet of the cane in planting young Vines, in the belief that additional roots will be secured. It is true that they are produced, but at the expense of the first and best roots of the plant, and for the first year or two at a decided sacrifice of vigour, which is never afterwards regained. Many years ago I had to transfer a number of vigorous fruiting pot Vines to tubs (they had been grown previously in 12-inch pots) in which it was intended to fruit them. In putting them into the tubs the balls were not disturbed more than was sufficient to disentangle the points of the roots, as is always done in such cases. The canes broke nicely, and bore a moderate crop, but not anything like what we expected. They seemed to hang fire, as it were, as if their energies were arrested in some way or other, until the crop was nearly finishing, when they made a second effort at growth; but on the whole they disappointed us considerably. After the crop was cut I pulled the Vines out, and on examining them it was found that they had two distinct sets of roots—first, the old ball, which had remained perfectly inert; and secondly, a tier of young, vigorous, adventitious roots, which had pushed out at the surface of the soil about three inches above the top of the ball, the canes having been covered up that depth. I had noticed similar cases before, but not of such importance as to attract much attention. In the present case, however, it appeared that the downward course of the sap had been arrested just where the canes came into contact with the soil, and, instead of passing on to the original roots, to excite their activity and increase their growth, had induced the development of a fresh set; and that, while these were forming, the cane was in much the same position as a cutting—in a semi-dormant state—until the new roots had advanced to furnish supplies. Since this happened I have been careful, in planting permanent Vines particularly, never to bury any portion of the stem, and rather prefer to plant young plants from eyes, which are not so apt to root from the stem the first year. I have, however, convinced myself more perfectly by repeating the experiment in two or three cases at different times, and always with exactly the same results. About four years ago I had to plant a large number of Vines; some were from eyes, and some were year-old rods. All were planted inside, and of the latter I earthed up a few plants about six inches, to induce secondary roots, as I may call them. These in every case behaved exactly like those in the tubs—made little or no growth till the new roots were furnished, when they made a start, but never attained to anything like the vigour of their neighbours, which had been allowed to depend on their legitimate roots; and when they were pulled up in autumn the old roots were found to have made no growth whatever. The explanation, I think, is simple: the leaves feed the roots—i.e., the sap, after it has been elaborated, returns to the roots to lengthen out the spongioles. If the downward current is therefore arrested in any way by accident or otherwise at any particular place, roots are emitted if other conditions are favourable and "Peter is robbed to pay Paul," but to the disadvantage of both parties. The first roots of the Vine are the best; multiply them by all means, but do not attempt to substitute them in the way I have described, which would just be like offering a man crutches who has already got a good pair of legs.

J. S. W.

Planting "Policy" Walls with Fruit Trees.—At Paxton House, Berwickshire, the proprietor has planted 370 yards of "policy" wall with fruit trees. Last winter the border was trenched to the width of 18 feet, and was planted in spring with Apple, Plum, Pear, and Peach trees. The trees are planted doubly thick against the wall, as it is the intention at present to plant more of the wall when the trees meet. The aspect is almost directly south, and the soil a good yellow loam. The border is to be protected by a wire fence,

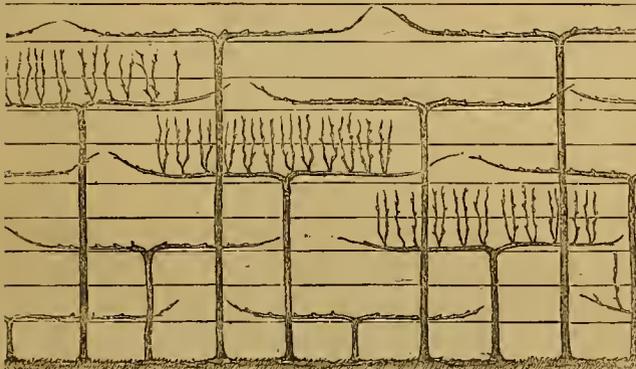
made rabbit proof by means of wire netting. The fruit trees on this wall will be a great advantage for affording, as they cannot fail to do, a supply of early and late fruits. There are many good "policy" walls which might be used for fruit growing in the same manner, and, although there would be a little outlay at the commencement, I am certain that when the trees shall have arrived at a bearing state, the return from them will be more profitable than from any other kind of crop that could be taken off the land which the roots of the trees occupy.—D. CHRISTIE.

THE VINE IN THE OPEN AIR.

(Continued from p. 370.)

TRAINING.

In the mode of training employed at Thomery, all the bearing shoots proceed from the top of the horizontal ones; each eye is allowed to carry two shoots—one for wood-making, the other for fruit-bearing; each Vine is furnished with only two horizontals; and a number of Vines, varying in the heights of their stems, are arranged one above the other to furnish high walls and dwelling-houses from base to summit with a succession of horizontal and vertical Vine branches. The distance between the horizontal courses at Thomery is 18 inches, at Fontainebleau 2 feet, and it ought to be 30 inches at least in England, as the Vines form larger leaves in our climate than in France. Five Vines will be employed to furnish a wall 12 feet high on this mode of training. The Vines should be planted about a yard apart, and each horizontal should extend from 6 to 8 feet on either side. The fruit-bearing shoots



Wall of Chasselas at Thomery, showing horizontal cordons pruned and unpruned.

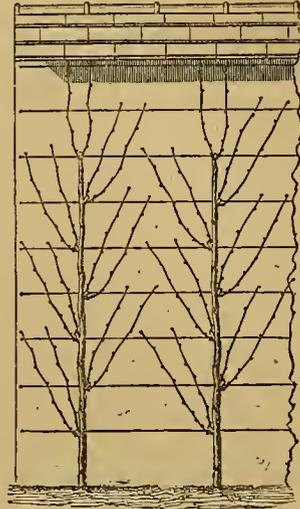
are to be left from 6 to 9 inches apart. At Thomery over three hundred bunches have been gathered from an area of 60 square feet. The advantages claimed for this mode of training are equality of relative position of all the fruit-bearing branches, economy of space, and certainty of complete furnishing. Each plant will have the same number of shoots, say twelve to sixteen, to sustain, and the sap will be distributed to them all alike. In fact, the Thomery Vines are simply fruit trees with a horizontal base and vertical centre of equal elevation throughout.

Another useful and highly effective method of training, by which the fragments of space usually lost at tops and bottoms of walls may be gathered up and utilised, is as follows:—On the wall spaces let us imagine a Peach tree with a Vine cordon at the base, and another under the glass coping. The latter will furnish something like a Montpellier atmosphere for the Vine, which cannot fail to prosper in its elevated crystal palace. We give two other illustrations, which exhibit a mode of vertical training with alternate spurs, so arranged as to cover the greatest possible surface with fruit-bearing shoots.

PRUNING.

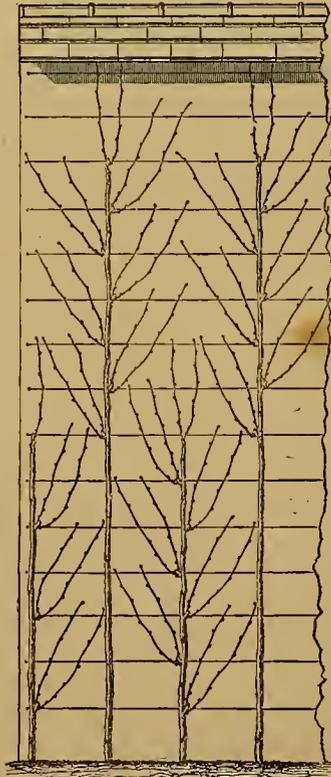
There is no branch of Vine culture more simple than this. The Vine is a rapid grower and an enormous cropper, hence the necessity of vigorous pruning. But because the Vine will bear much pruning, some cultivators treat it as if it was only grown to be slashed to pieces. No sooner is a fine shoot made and ripened, than it is cut down and the process repeated, until the roots finally give up the contest and fail to send any more food forward to the front. I can find no good reason why a Vine planted, say in April, forming a fine healthy growth during the summer, should be slashed back to one or two eyes at the end of the year. Why should not a yard or two of

the well ripened wood be left to furnish Grapes? I know that a Vine a year old will produce capital Grapes without exhausting the plant or placing too great a strain on the roots. My idea is that the best receipt for the manufacture of fibrous roots is to give the top some work to do other than the pushing forth of flexible fishing-



Vines trained vertically with alternate spurs.

rods, and that the best work for the further well being of the Vines is the carrying of a moderate load of fruit in their early days. Cut the wood to a single eye, and that eye will push a huge rod like a water pipe, and the roots at the lower end will partake of the same character. Thus a gross top excites a gross root, and the two together



M. Charmeux's System of Vertical Training. The Vines are planted at 16 inches apart.

are fatal to soundness of constitution and permanent fertility. In opposition, then, to the general practice, I would say, leave a bit of wood, if it is strong and well ripened, to bear fruit the next season after planting. Suppose, for instance, a wall 10 or 12 feet high on the gable end of a house is to be covered with Vines climbing up it vertically; the

chances are that, by the time the shoots reach and furnish the top of the wall, the bottom of the Vine would have become weaker than the top. To prevent this and ensure a uniform crop from top to bottom, three rods might be used instead of one. The first rod should start from the bottom, and fruit, say, along 4 feet, the second year. During the summer it should reach the top of the wall; at the winter pruning it should be cut back 4 feet, and all the bottom spurs should be cut so closely off as not to break any more. Last season a second rod had been brought up from the bottom, and this is now cut down 4 feet, and tied against the denuded portion of the first rod. Another young rod is then brought up, and at the winter pruning three are left—one at 12, the second at 8, and the third at 4 feet from the ground. The wall is fully furnished, and a fourth rod is brought up from the bottom. From this time the longest rod is cut out every year, and a fresh one tied in. There is less crowding than might be supposed, because there are never two crops of fruit opposite each other. Vines 30 inches or 3 feet apart can be managed well on the long or short rod system of pruning, both of which have many advantages. The free and constant production of so much wood keeps the roots active and healthy. Each fresh shoot enables the Vine to renew its youth; the spurs have no time to get stunted, and the bunches are finer on the rod than on the spur system of pruning. But it will be observed that I have described a mixture of both, which is common in practice. In fact the surest cultivators are those who prune for a crop. Hitherto instruction has only been given about winter pruning. But summer pruning comes first in order of time, and that begins with disbudding. As soon as the Vine buds fairly break, rub off all the weakly misshapen ones. When the bunches show, select the finest, or at most two, and rub off all the others bodily. As soon as the leaf beyond the bunch expands a little, stop the young shoot with finger and thumb. Also remove all tendrils from the leading shoot, and tie it securely to stake, wall, or roof. When the fruit-bearing shoots make another leaf, stop them again, and so on till the end of the season. Should, however, the succession of leaves crowd each other unduly, all leaves beyond three in advance of the bunch may be cut off. Likewise all small crowded leaves. One fine leaf fully exposed to the sun will do more for the crop, and deposit more strength in the plant for future use, than half-a-dozen ill-favoured half-smothered ones. All summer pruning should aim at the full exposure of the young wood, and the due exposure of the fruit to the light. That is, it must not be shaded with a screen of foliage, but neither must the bunches be set in the sun without their natural shade, the leaves. Especially must this be guarded against on south walls and the roofs of houses. In regard to the latter I ought to have stated, under the head of training, that roof trellises should be placed at least 18 inches from the tiles. I have seen Grapes and other fruits literally roasted by lying on the roofs.

CHASSELAS.

(To be continued.)

UNHEATED VINERIES.

I HAVE a lean-to house which faces south-east, and is 60 feet long, 10 feet wide, 9 feet high in front, and 12 feet high at back. Every other sash opens in front; there are ventilators in the glass roof, and 3-inch wide perforated zinc the whole length of the house between the top of the wall and roof. It was built for an orchard-house, but has now nothing but vines planted inside, and about these vines I want a little advice. When the house was built there were nine vines planted in it; that is fully twelve years ago. They do well till the ripening season, when after a short period they come to a standstill, do not colour well, and are very poor in flavour. I have an idea that I have too many vine plants in the house. I propose to remove every other one, filling up the ground where they come out with good soil—crushed bones, &c. When ought I to do this? There is no heating apparatus, therefore the leaves hang very late, and I suppose I must not transplant them till the leaves have fallen. The vines are Black Hamburgh and Sweetwater. Four years ago I had an enormous crop, which ripened well throughout; the next season the vines were attacked with mildew; my gardener burnt sulphur and entirely destroyed the crop, and since then, though the vines are very strong the fruit is poor, the skin is thick and tough, and seems hide-bound. There has been a top dressing of rotten manure put on the surface every year; the stems are quite 9 inches in circumference, the house is very full of branches, crossing each other, and I imagine they have been allowed to grow too luxuriantly at first.

My Apple and Pear trees produce lanky slim branches, bare from where they spring to within a few inches of the top, where there are a few leaves. Should these be shortened in when the trees are pruned? My soil is light on a gravelly subsoil.

YOUNG AMATEUR.

[As regards Grapes, the test of skill is in the finishing of them. In

your case we have not far to seek for some of the causes of failure. One of these is probably the perforated zinc running the entire length of an unheated house, and of course admitting a draught of air night and day in all weathers. This alone, in such a summer as this, was enough to check growth in the manner described. Plaster the zinc over or remove it and brick up the space. Air is an important factor in the finishing of Grapes, but the cultivator should have the power of admitting it, or not, at pleasure. Nearly all the symptoms—thick skins, flavourless quality, green leaves hanging late and still keeping green, point to a want of heat as the chief cause of failure. The heavy crop four years ago was probably the result of the hot summer, and the mildew that succeeded was most likely a protest against taking too heavy a crop. Of course also the burning the sulphur, to the destruction of the crop, would affect the leaves and the health of the vines as well. But as they are still strong, this accident can hardly have had much influence in preventing the succeeding crops from finishing. Try a warmer regimen before doing anything else. Nine vines in a house 60 feet long are not too many unless you wish to adopt the extension system. Keep each vine to a single rod, and do not allow the branches to crowd each other. The best cure for over-luxuriance is a good crop of fruit thoroughly finished. If so strong, on no account give any bones or other feeding stuffs. Weak vines can often be helped marvellously to finish their fruit by a top-dressing of Meredith's vine manure, guano, or bone dust; but strong ones need no such stimulants. If keeping the vines warmer does not answer, examine the roots, and see whether they have not got too far from the surface, away into some strong ungenial subsoil. If so, carefully lift the vines in November—say one-half at a time—and bring up the roots into a new border formed of fibry loam only. Apply no more rotten manure to the surface. From the symptoms described the vines are not suffering from any lack of food; on the contrary, they seem to have had more than time and temperature enabled them to utilise and convert into well-ripened highly-flavoured Grapes. As to your Apples and Pears, root-prune the trees and leave the lanky shoots intact. Bend or twist them about in any way so as to make the buds break, or, better still, plump up into fruit buds during next summer. Then in 1874 each of these bare lanky shoots will become a rope of Apples and Pears. By cutting them back as you propose, you but make the lankiness and the bareness perpetual. The knife on the roots is the remedy for lean barren branches.—D.]

Cheap Vineries.—A few weeks ago I saw a small span-roofed house, used for Vines, in the garden at Woburn House, Woburn Green, a description of which, I think, may be of use to people of limited means. The house is 20 feet by 10 feet. The outer walls are 3 feet high; then we have 18 inches of glass, the panes of which are made to open on one side. The roof is made with bars, and glazed in as a fixture. The door is at the south end, over which, and at the other end, is a small window for top ventilation. The timber used is rough. Inside is a bed formed by making a wall 2 feet 6 inches high, at a distance of 3 feet 9 inches from the outer wall and parallel with it, which leaves ample room for a walk. The bed can be filled three-parts full with good soil; the space left serves for manure, such as the emptyings of an earth closet, &c. The house is not heated, and can be put up for about £14. In such a house I saw a fine crop of Black Hamburghs, and even a tolerable Muscat of Alexandria. The house requires but little care, and appeared to me to be much superior to some of the cheap houses we have seen lately recommended.—J. CROUCHER, *Sudbury House, Hammersmith.*

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

The Murrey Nectarine.—Is this Nectarine a good variety for forcing? I have already Elruge and Violette Hative, which I know to be good; but I have had no experience with the Murrey, of which I have a fine tree on the open wall.—J. C. Hants. [The Murrey Nectarine is a medium-sized fruit, melting and rich. The tree is hardy on open walls, and when forced bears well either in an early or late Peach-house.]

Apples for Ornament.—Some of the best varieties of Apple trees to plant in shrubberies for ornament are the Hawthorn, the Emperor Alexander, and Lord Suffield. These are all trees of vigorous habit, and have fine foliage. They produce large clusters of very fine bloom, and bear abundant crops of fruit, which is large, handsomely coloured, and good for either cooking or eating.—C. B. S., *Jersey.*

Fine specimen Pear tree.—The largest Pear tree I have ever seen is in the middle of a field between Madresfield and Great Malvern on the right hand side in walking from Madresfield. It looks in size more like a fine old Oak than a Pear tree. I had no means of measuring it accurately, but it seemed about 13 feet round 4 feet from the ground. It is a Perry Pear, evidently a seedling tree, but about 20 years ago the huge branches were cut well back and the whole grafted with the desired Perry variety. The branches are each as big as what would be considered a very large Pear tree.—R.

THE FLOWER GARDEN.

MULGEDIUM PLUMIERII.

FEW and far between are the plants belonging to the Ligulate section of Compositæ, whose beauty recommends them to a position in the herbaceous border. Usually speaking they are of a weedy and, if I may coin a word, a "Dandeliony" appearance. Here, however, we have a most desirable exception to the rule. Not only have we, in the charming tint of the light blue or mauve flowers, but also in the general contour of the plant, as well as in the vigour of its growth, properties that commend it, if not for the herbaceous border, at least for a prominent position in the fore rank of the shrubbery, or for a conspicuous place in the wild garden, where it will hold its own against all comers.

The genus *Mulgedium* has been very properly separated from the old genus *Sonchus*, and includes those species that have blue flowers, all being strictly Alpine in their natural habitats, though by no means "Alpine" in their stature. The species, *M. Plumierii*, is a native of the Pyrenees, where it grows to a height of 4 or 5 feet, but when located in our borders, and under the influence of a deep, strong clay, it is not unusual to find it as much as 8 and 9 feet high. Its foliage is beautifully varied in outline, producing an illustration of a runcinate leaf on a giant scale, and possessing, at the same time, an irregularity of development in its wavy outline which does not generally belong to the runcinate leaf. The



Mulgedium Plumierii.

surface is of a dark, glossy green above, with a slightly glaucous or greyish hue beneath. Produced in great abundance, the leaves form a noble basis from which the tall, branching flower stems rise. An admirable idea of the appearance of the plant is conveyed by the accompanying wood-cut, which renders any further description on my part unnecessary. In many collections this plant goes by the name of *M. fimbriatum*; but as I can find no authority for that name beyond the indefinite one of *Hort.*, it will be advisable to refer it back to its true specific title.

JAS. C. NIVEN.

Hull Botanic Gardens.

EARLY-FLOWERING BEDDING TULIPS.

As bulb catalogues are now being sent out in thousands by our seedsmen, this is perhaps an opportune time to speak of the early Tulips which have been so much used in the spring garden of late years. They form effective and brilliant masses of colour, and in the variety and richness of their hues surpass all other spring bulbs. The use of Tulips in the flower garden is sometimes objected to on the ground that the masses of colour are too vivid and pronounced, that they are too expensive, and that their blooming season is so short in duration that the service rendered by them is correspondingly limited. There is an amusing inconsistency in some of those who occasionally advance the first objection, inasmuch as they will bed out masses of scarlet Pelargoniums, &c., during the summer. The masses of colour furnished by Tulips light up our flower

gardens at a season of the year when there is much dreariness, and when there is little if any glaring sunlight to bring out the vividness of the colouring. The expense of maintaining a collection is more apparent than real. What is required is a small reserve garden to which the Tulips can be removed when it is time to commence the summer planting. Here the bulbs will not only mature themselves, but throw off offsets which in two or three years make fine flowering bulbs. A good light and moist sandy soil is the kind of home best fitted for the Tulips during the summer. The blooming season is not near so short as is generally supposed, and between the earliest and the latest flowering kinds a considerable time intervenes. But beds of Tulips should be carpeted with small tufted or creeping plants, and there are many hardy flowering and foliage plants suited for the purpose. The white *Arabis albidæ*, together with its variegated form, the *Aubrietias*, *Hepaticas*, *Primroses*, *Cowslip*, *Silene pendula*, *Pansies*, early flowering *Violas*, *Saxifrages*, *Iberis corifolia*, *Sedum acre aureum*, *Ajuga reptans rubra*, and many others, make excellent carpets for beds of bulbs. When a collection of Tulips is sufficiently enlarged to admit of its being done, it is a good plan to rest the bulbs every third year by preventing them from blooming. They occupy but a small space in a reserve garden, and can be planted quite thickly. There are a great many varieties, but all are by no means adapted for bedding, while some are peculiarly fitted for the purpose, from their richness of colour, short erect habits, and comparative hardiness. Uniformity is essential in a bed of Tulips, and hence the necessity for massing them in varieties. The following are the best sorts for bedding purposes: Of white selfs, *Princess Helena*, pure white, very dwarf stiff habit, and erect flowers, the earliest and purest of all the white flowers, and equally fine for cultivation in pots; white *Pottebakker*, with large and boldly handsome flowers, and a very rigid habit; this makes a grand and effective bed. *Comte de Mirabeau* and *Rosa Mundi* are two flowers having a white ground tinted with rose; the last especially is a very good bedder, and much used for the purpose. There are two self yellow Tulips that make excellent beds—viz.; *Chrysolora*, which is the earliest, and has pale pure yellow flowers of good form and habit, and makes a charming bed; and *Golden Prince*, with fine bold deep yellow flowers, and a stiff upright habit. A third could be found in the yellow *Pottebakker*, which is a counterpart of the white variety, and makes a fine bed, but is apt to grow tall. There is quite a wealth of crimson and scarlet selfs, and these are well adapted for massing. One of the earliest is *La Belle Alliance*, deep shining scarlet, dwarf, stiff, and very showy. Succeeding this by the space of some two or three days, comes scarlet *Van Thol* and *Couronne Pourpre*; the first brilliant crimson scarlet, the other shaded crimson, and the deepest coloured of all in this section. The last-named makes a grand and striking bed. *Vermillon Brillant*, vivid vermilion scarlet, is a magnificent kind; but its comparative scarcity, and consequent high price, preclude its extensive use in the flower garden. For an effective scarlet Tulip scarcely anything can beat *La Belle Alliance*, while it is cheap in price and easily obtained. This, *Couronne des Roses*, and *Couleur Cardinal*, each having a shaded crimson base and edged with brilliant fiery scarlet and an unusually rigid, stout, dwarf habit, are the three to be commended for bedding purposes. *Paul Moreelse*, cerise-crimson, is a fine and striking hue of colour, and a bold and showy Tulip. Purple and violet shades give some fine self flowers, and they are particularly useful for bedding purposes. There are two superb dark purple flowers of great beauty, viz., *Wouwerman* and *Van der Neer*, the former very dark purple, the latter rich, shining, deep violet. A column written in praise of these two fine varieties would scarcely do them justice. *Proserpine*, rosy-violet, the finest of all the pale violet-coloured Tulips, is of large size, exquisite shape, and truly regal in a bed. Somewhat paler, and not nearly so large, but yet very charming, is *Queen of Violets*; and paler still is *Molière*, but both are good bedding kinds. Some of the edged flowers have a magnificence peculiarly their own. Anyone who has seen a bed of the superb *Keizer Kroon*, crimson-scarlet, deeply edged with deep bright yellow, will readily agree in rating it very highly. Equally large in size is the *Duchesse de Parma*, the edges of the petals being feathered with gold; this too makes a very fine bed. *Princesse d'Autriche*

is a broken form of this; the feather of gold is retained, but a broad streak of the same colour breaks into the crimson base. *Le Matelas*, rose edged with white, and *Rose Luisante*, pale rose, which becomes almost white towards the edges, are charming flowers, and very pretty in beds. There are still the striped flowers, and these are extremely useful in giving relief to the masses of colour afforded by the self flowers. They may be divided into white flowers with red stripes, and yellow flowers with crimson stripes. Of the former *Royal Standard* and *Bride of Haarlem* are the most useful; the latter is the best flower, and has most colour; both are dwarf, erect in habit, and early blooming. *Cramoisie Royale* has rich, deep carmine stripes, and is very handsome. *Van Vondel*, crimson scarlet flushed with white, is a very large and showy Tulip, dwarf in growth, and a fine bedder. Of the latter, or flowers having crimson stripes on a yellow ground, there are *Golden Standard*, *Louis d'Or* (very fine), *Marquis de Wessenrode*, and red-striped *Pottebakker*, all four very useful and acceptable bedders. With the exception of a very few of the double flowers, they are not in nearly such general demand for bedding purposes. The best are *Couronne des Roses*, deep cerise-crimson self, very handsome and showy; *Coronne Pourpre*, shaded dark crimson self; *Gloria Solis*, deep scarlet edged with bright yellow; *La Candeur*, creamy white self, habit dwarf and stiff, but somewhat late in blooming; *Imperator Rubrorum*, bright red self; *Rex Rubrorum*, crimson scarlet, with green tips, which detract from its effectiveness; *Tournesol*, crimson, deeply edged with gold, one of the most showy and valuable of the double varieties; and *Yellow Tournesol*, yellow flushed with orange, the best yellow self double Tulip.

THE BEDDING-OUT SYSTEM.

I PASS over your remarks on this subject. I consider they do not require my notice. I turn me to Mr. Peach's expressed opinions. Briefly summed up, these are, that highly-dressed grounds are a "*sine quâ non*," and it is impossible to furnish them, except on the present bedding-out system. As the sole inventor of the newest and best system of bedding-out, I say to him, that he knows as much about bedding-out as our father Adam knew about tailoring (the half of which, as the saying is, wasn't much) when he talks of highly-dressed beds covered with a lot of miserable storm-tossed *Geraniums* and kindred plants, rotting in their wretchedness, as all the bedders have been doing this season, so far as I have seen. We have improved considerably upon the traditional Fig leaves for clothing ourselves, and why do we persist in clothing our highly-dressed beds with such ephemeral abortions as we do? Why cannot we exhibit progress in regard to clothing them as well as ourselves? Let me enlighten Mr. Peach and all others interested on the subject of my astounding invention lately described in these columns. Since I last wrote, the demand for my patent fabrics for bedding purposes has grown apace. I now propose erecting mills for manufacturing the miles upon miles of bed cloth, which will inevitably be greedily bought up, the moment the eye of the gardening public is properly brought to bear upon its many merits. In the meantime I am confining myself to the usual straight lines, with the favourite contrasts, and a few delightful geometric patterns, for which the canvas (machine cut and sewed) is admirably suited. My wife has also designed, for our next year's pattern, a fine tartan, which will certainly be all the rage. Our drawing-room wall paper also, being a most *recherché* thing, we are arranging for a quantity of a like pattern. If we can get up sufficient stock of it, we may let it out in time for spring arrangements. The ground is a beautiful clear yellow, netted with green, and relieved by transverse stripes of red and purple. A large stock can be easily propagated when once we get the necessary blocks cut. As gardening matters now are, everybody does exactly what he thinks fit, the result being a conglomeration of the most bizarre effects. This will in future be entirely done away with, as we do not intend to let out more than two or three styles yearly. Everything will then wear an air of charming uniformity, which at present is such a great desideratum. I may mention that this year's success has entirely converted my neighbours, and many others, who have from far and near visited my garden. They came from the sloppy beds and rotting plants, which had well-nigh driven them to distraction through the whole of this inclement season; they came and saw my chaste patterns glowing, actually glowing, with the washing the storm had given them, and they departed with a new purpose and a light heart. Thou my system is so cheap (if wanted more expensive, try the dearer woollen patterns, and for the ducal garden, even say silk), so easy of management, and capable of such extensive

treatment. Why, although I have only some short lengths in three patterns, I have an entire change of garden scenery every week. I have my groom and stable-boy to relay my beds every Monday morning. Last week it was ribbons, this week it is geometrical, and next week it will be principally bars. The bedding system, with its four months' sameness and eight months' bleakness, is, you will perceive, a sorry substitute for my ever-blooming and ever-changing beds. I say, therefore, go in for the canvas at once, and be sure to get it properly waterproof and the colours well fixed.

Muswell Hill.

J. T. THORNTON.

DRACÆNAS IN THE NORTH OF ENGLAND.

AFTER two or three years' trial of *Dracæna grandis*, *terminalis*, and *Cooperi* out of doors during the summer months, in one of the most unfavourable parts of Yorkshire, I think I am justified in recommending these three varieties as a very desirable addition to sub-tropical plants. I have had them out from June to October, and find that they not only retain their foliage and colour well, but even grow a little; though they ought to be grown to the desired size before they are put out. Anyone who has seen those varieties of the *Dracæna* knows how splendidly ornamental they are, and can conceive what a fine group they make when a number of plants are massed together. It was this temptation which led me first to try the *Dracæna*, and it has behaved right well. Of course it is not everyone who can get up and keep a stock of such a plant in quantity sufficient to fill whole beds with it; but it is not at all a difficult matter to get up as many plants as will lend character to a bed, planted perhaps with such things as *Cannas*, *Phormiums*, or *Palms*. These plants are rather dull by themselves, but when lighted up with *Dracænas*, if only round the margin of the bed, the improvement and effect are most conspicuous and telling. I am aware that the *Dracæna* has been used for some years in the south as a sub-tropical bedder; but I am recommending it now for more general use in any part of England or Scotland, where the climate is ordinarily favourable. Those who have an old plant or two have the means of getting into a stock at once. A common but not an expeditious way of propagating it is to make cuttings of the tops; the next best way is to split the stem up, chop it into pieces, and plant them like *Potato* sets. Many of these will make buds, and the buds plants. The surest way, however, of multiplying the plants is to cut up those tubercular protuberances that form themselves on the roots of the *Dracæna*, particularly on old plants. If these are cut into pieces about a quarter of an inch long, taking care always to leave as much of the outer bark on each piece as possible, and laid in a pot among fine light soil, just covered deep enough to prevent their being washed bare in watering, and plunged in a bottom heat of 90°, you will very soon have about as many nice plants as you have sets. Once the plants are fairly up and rooted, they must be potted singly in 4-inch or 5-inch pots, in a compost of loam and leaf-mould, and grown on in a moist stove temperature, where they will have a good light, so as to bring the colours of the foliage well out. By midsummer, autumn-struck plants will be a good size, and, after being hardened a bit in a cold house, they may be plunged outdoors, where they are intended to be for the summer. If tall, conspicuous plants are desired, they should be grown on for two years or more; and if a stock is propagated every year, there will always be a good supply for all purposes. I find the *Dracæna* to be just about as hardy as the *Canna*, having had them planted out together.

J. S.

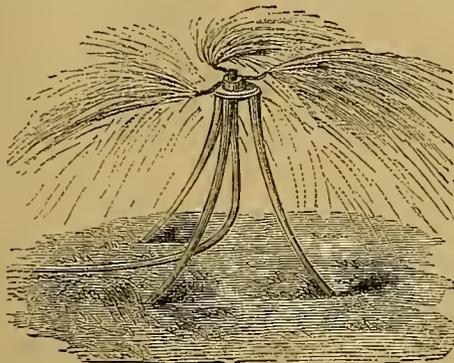
[About London the above-named *Dracænas*, as compared with the *Canna*, do not prove quite so valuable. It is probable, however, that we have some valuable things to learn as regards the hardier species. It is, for example, not generally known that *Dracæna indivisa* is perfectly hardy, and a noble object in the south of England and Ireland. I have seen it thrive perfectly at Woodstock in Kilkenny. Hence surely there are many mild districts where this fine species might be tried out of doors, where one never sees it, in the home counties.—W. R.]

Violas for Spring Bedding.—Are the *Violas* (*cornuta* and *lutea*) available as spring bedders? I have tried them, but they do not bloom sufficiently early to come in with *Arabis*, *Daisies*, *Pansies*, *Wallflowers*, &c. Would plants raised from seed in the early summer

bloom early the following spring? I should be glad to know of any way of propagating them for spring work.—THOS. HURR, *Corley, Warwickshire*. [Mr. Fleming, of Cliveden, who has great experience in such matters, says, "None of the *Violas* blooms sufficiently early to be effective; they do frequently produce a few scattered blooms, such as plants put forth out of season, but not in sufficient quantity to make a decided effect before June. This may vary in different soils and situations, but it cannot be varied by treatment, as I have tried every way I could think of, and at last I have given them up to fall back on the *Pansies*. Of these all the Cliveden varieties, if struck in summer or early autumn, are seldom without a bloom all the winter, and are full of flower and gay long before any *Viola* shows a bloom."]

A CALIFORNIAN LAWN-SPRINKLER.

This consists of a light tripod, about 3 feet high, which supports a revolving head, consisting of three arm-like tubes attached to a hollow washer that plays around the tube to which the hose is attached. The arms are turned a little backward and upward, and the water as it flows out causes them to revolve, so as to produce a fine spray over a circle of from 10 feet to 30 feet in diameter, according to the pressure of the water. When that area has been well watered,



Californian Lawn-Sprinkler.

the machine is moved to new ground. It requires but little attention from a man working in its neighbourhood, and is a very useful affair in dry weather. In the case of large lawns, if set on a truck on wheels it could be easily drawn over them by means of a rope sufficiently long for the workman to be beyond the reach of the water. Any plumber could make one (mainly of gas-pipe) without much expense.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

***Tropæolum tuberosum*.**—One of your correspondents inquires where he can get this. I used to grow it very freely in front of a greenhouse in a light warm border in Ireland, but never succeeded so well since on heavier soils. I however have had the tubers several times since from Messrs. Peter Lawson and Son, of Edinburgh.—J. McE.

Meadow Saffrons in Kensington Gardens.—I noticed the other day the fading blooms of these valuable autumn blooming plants, of which several thousand have recently been planted in the flower walk at Kensington Gardens, a position highly suitable to them, and one in which I have no doubt they will, if left undisturbed, form highly attractive ornaments next autumn.—W. TURNER.

Hardiness of the *Wigandia caracasana*.—This plant is, I think, much harder than we imagine it is. I have several examples of it in my garden that do not yet show any ill effects of the cold weather which we have had, whereas most of the usual bedding plants are either killed or wholly unattractive.—JAS. KING, *Clapham*.

Royal Fern from Seed.—I have frequently tried to grow the seed of *Osmunda regalis*, but without success. Can you tell me how to make it germinate?—А СУБСТАВЪ. [Spore-cases of *Osmunda regalis* are difficult to find with seed in them, a fact which is probably the reason why you cannot get them to germinate. If the seed is there, you will have no difficulty in getting it up. It wants plenty of moisture and a bell-glass over, and takes more time to germinate than most Ferns.]

Variegated Queen of the Meadow (*Spiræa Ulmaria aureo-variegata*).—This is a very suitable plant for edgings to flower beds and borders. It thrives best, perhaps, in a comparatively moist soil and under partial shade; but it is neither particular as to soil or situation, so long as the ground is not too dry. For spring gardening it is extremely useful, as then it is much more attractive than at any other season. The leaves in spring are brighter than in the summer and autumn, for as the season advances, the vigour of the leaves increases, and consequently the marking diminishes; nevertheless, at all seasons they are extremely handsome. Few plants, indeed, are more useful than this, as it stands out-of-doors uninjured during even our severest winters, and it is easily increased in early spring by dividing the crowns. The flower-spikes should be pinched out as they appear.—W. F.

PUBLIC GARDENS.

DR. HOOKER'S REPLY TO PROFESSOR OWEN.

"PROFESSOR OWEN divides the 'aims and applications' of the Royal Gardens of Kew, according to his view of them, under seven heads. It is sufficient to state that some of these are recognised by the Government, and specified in their instructions under which the Director carried out his duties; but that others, and those of a most comprehensive nature, have no place there, and are not such as pertain to botanical gardens elsewhere. Amongst these are the agricultural operations specified by Prof. Owen, 'the application of manures, demonstrations of the fittest species of grasses for particular soils . . . methods of irrigation, subterranean pipe, conveyed liquid manures, and so forth,' all of which are being carried out with vigour and success by various agricultural societies and private individuals throughout the country. To establish such operations at Kew would involve an enormous expenditure, and occupy many acres of ground now devoted to the legitimate purposes of a botanical garden. Illustrations of rock-works, garden-sculpture, and ornamental waters, also recommended by Prof. Owen, appear to be equally out of place.

"Prof. Owen is in error in stating that the arrangement of plants in natural groups, with conspicuous labelling, &c., is at Kew 'at present limited to the herbaceous grounds;' as he is also in implying that there is no illustration of 'geographical distribution,' which is, in truth, carried out to an incomparably greater extent at Kew than in any other garden known to me at home or abroad. Prof. Owen cannot have visited the houses devoted to Ferns, Orchids, Succulents, Aroids, &c., nor the arboretum, fruticetum, and pinetum, nor observed the arrangement on the shelves of the two great buildings, the Palm stove and the temperate house. The fact that a first-rate herbarium and library must be maintained for the purposes of a botanical garden, and in immediate proximity to it, has not only been uniformly admitted and acted upon by successive Governments, but is so universally recognised by naturalists everywhere, that I am surprised that Prof. Owen should dispute it. I am sure that were he acquainted with the nature and amount of the duties devolving on this establishment, he would abandon his opinion without hesitation. In support of the contrary opinion he refers to that early period in the history of Kew, when its new and rare plants were named at the Banksian herbarium in London. But the naming of a few new and rare plants cultivated at the beginning of the century in a private garden of nine acres, probably at no one time containing more than 4,000 species, is a very different matter from keeping accurately named public collections that occupy 300 acres, and are estimated to contain 20,000 species; and this in an establishment that is annually called upon to name literally thousands of plants from other botanic gardens and nurseries in England and similar institutions abroad. A great deal of the naming, and keeping correctly named the plants at Kew, can be conducted only by skilled botanists visiting the grounds daily. Large classes of plants are now cultivated that must be named in the houses where they grow; and many more, the tropical especially, could not be sent to a distance to be named, without serious damage *in transitu*. To this must be added the necessity of naming, and ticketing with copious information, the vegetable products of economic interest, in three museum buildings, the illustration of which products by specimens Prof. Owen admits to be a legitimate object of the gardens of Kew. Nor was the naming of the Kew plants carried out in London, as is supposed; there was a large herbarium in constant use at the Royal Gardens at the very period alluded to, the breaking up of which, when it was proposed to give up the gardens, necessitated the formation of another. No comparison whatever can be instituted between the needs in these respects of the Royal Gardens at Kew and the Zoological Society's Gardens in the Regent's Park. The reflections that follow on the conduct of the late and present Directors of Kew Gardens are not suited for official discussion.

"Prof. Owen is in error in asserting that the main end or drift 'of Dr. Hooker's evidence before the Scientific Commissioners is to impress upon them the necessity of the transfer of the collection of dead plants' from the British Museum to Kew. My evidence is unequivocally opposed to such a transfer. Herbaria are not costly establishments, but the least expensive of all natural history collections; and the objects and applications of botany in its largest sense are now so numerous and so important as to render a division of the subject necessary; whence the expediency of maintaining a country and a metropolitan department, each with a herbarium, as the most essential, but least expensive of its adjuncts, may readily be demonstrated.

"So far from desiring that the British Museum herbarium should come to Kew, I should propose to recruit it from that at Kew, which

could be done to its very great advantage. Prof. Owen's approval of the saying of 'a great wit and original thinker,' that 'the net result' of a herbarium is the 'attaching barbarous binominals to dried foreign weeds,' will not find an echo amongst those conversant with the subject. Had it been otherwise, successive ministers would hardly have tolerated the existence of the Kew herbarium, or of that at the British Museum either.

"The disparaging remarks that follow on the views of his duties held by the late director, and on his performance of them, are not best dealt with by the counter assertions of his son; they are best disposed of by certain passages in the Treasury Minute that follows Prof. Owen's statements, and by the unanimous verdict of the late director's countrymen and foreigners everywhere. The suggestion is offered that an official inquiry should be made of leading gardeners to ascertain 'the kind and degree of information and aid which they derive or have derived from the National Establishment.' The answer to this has already been given, in the addresses to the Premier by the Royal Horticultural Society as a body, and separately by its Floral, Fruit, and Scientific Committees; and by the meeting of botanists and horticulturists held in London; and by the concurrent evidence of gardening periodicals throughout this country. The statement that the Royal Gardens had not fulfilled their function of introducing new, rare, and beautiful plants is best met by a reference to the pages and illustrations of the *Botanical Magazine*, a work that has issued monthly (and without a month's intermission) from Kew, ever since 1840, edited by the director, and which is devoted to new, rare, and interesting plants, the larger proportion of which have flowered at Kew.

"The passage relating to the avenue of Deodars and Limes along the Syon vista, the formation of which is censured as a failure at the cost of 'hundreds or five hundreds' of trees, is founded on a complete misapprehension. Without going into detail, it is sufficient to state that not twenty Deodars have been sacrificed, and no Limes at all. The censuring of the Director for removing the Araucarias from Richmond Park to Kew is equally founded on a misapprehension. These Araucarias were twice offered to Kew before they were accepted; they stood in a private piece of ground, whence their removal was considered by their possessor to be a necessity; and the alternative of removal to Kew was their destruction. My predecessor is censured for neglect of the great Araucaria, which, it is implied, is consequently inferior to that of Dropmore. The facts are as follows:—This Araucaria, with four others, was brought to Kew in 1796, and kept in a greenhouse. In 1808 it was planted out in a poor sandy soil, and being supposed to be tender, was enclosed in a wooden house for many months in the year, in consequence of which its growth was checked, and it was rendered so weak that it was almost killed in 1838. It was not till the late director took office in 1840 that the house was abandoned, good soil given to it, and other means taken (which have been sedulously repeated ever since) to encourage its growth. It is now a striking object 30 feet high and 90 in girth of the branches; and if not nearly so handsome an object as the Dropmore Araucaria, this is partly due to the fact that the Dropmore tree was planted out at once, in a soil and situation as admirably adapted to Araucarias as those of Kew are naturally unsuited to them; and partly to the fact, probably unknown to Prof. Owen, that there are two very distinct forms of this species, a conical and a round-headed, of which the Dropmore specimen belongs to one and the Kew specimen to the other. Of the other four plants, one is that now at Dropmore; a second was killed by cold at Kew early in the century; the third was given to Sir Joseph Banks at Spring Grove; and the fourth at a later period, to Prince Albert, and taken to Windsor.

"In the contrast drawn between the herbarium establishments at the British Museum and at Kew, it is stated that the staff of the former consists of three officers, with aggregate salaries of £850, and 'that their time is exclusively given to the duties for which they are paid;' whereas the aggregate salaries of the three herbarium officers at Kew is £750, and that one is Professor of Botany in University College, and another a lecturer at a London Medical School. I am surprised that Prof. Owen should be unaware that one of his own three officers is botanist to the Royal Agricultural Society, and another a lecturer at a London Medical School, and editor of a valuable botanical journal. Nor does Prof. Owen, in his comparison, take into consideration that the Kew herbarium is open from 8.30 a.m. to 5 p.m. in winter, and 6 p.m. in summer, whereas the British Museum herbarium is open only from 10 to 4 in winter, and 10 to 5 in summer; as also that the Kew officers have not only the keep of the largest and most frequented herbarium in the world, but of a very large library, and have the duty of naming all the plants throughout the gardens and museums, together with many other duties that do not fall upon the British Museum officers. The fact is, that the exigencies of this establishment

require that the herbarium should be open during that long period, but the officers are not required to be in attendance, and at their work, for more than seven hours daily throughout the year. Those seven hours (and to their honour be it said, often many more) are devoted exclusively to the duties of their respective offices. That the officers both of the British Museum and of Kew should be chosen to conduct the very brief professional and other duties which they perform elsewhere (at their own time), is both honourable to themselves and in many ways advantageous to the establishments with which they are officially connected, always assuming that these vocations do not interfere with their working hours at Kew and at the British Museum, or with their powers of work during those hours. The statement that there are at Kew 'a special curator of the museum, &c., and an assistant at £315 per annum,' is an error. There is but one curator for the three museums, and his salary is £120, rising to £150, without a house or any other advantage; he has no assistant, and never had one.

"The last of Professor Owen's statements to which I shall allude are the following, which I quote *verbatim* :—

"Dr. Hooker has been enabled to publish, or aid in the publication of, 130 volumes on botanical subjects. . . . To the extent or proportion in which the director's time has been diverted from the immediate aims of the Royal Gardens to this foundation of his scientific fame, the proportion of his salary of £800 per annum must also be placed to his credit of the superaddition of the dead plants to the Botanical Department under the Board of Works, competing with the Botanical Department under the trustees of the British Museum.' The first statement in this extract has no foundation in fact; it would ill befit me to notice the insinuation contained in the last. (Signed) "Jos. D. HOOKER, Director.

"Royal Gardens, Kew, Aug. 6, 1872."

A PROPOSED GARDEN IN FRONT OF ST. PAUL'S.

It has been proposed, at last, to throw open the enclosed space in front of St. Paul's, at the top of Ludgate Hill. This will be, indisputably, a great improvement if proper advantage be taken of the site. There is sufficient room for the formation of a garden, which, if well carried out, would add greatly to the aspect of our noble Cathedral, especially as approached from Ludgate Hill. There is no great Cathedral in Europe so well placed for effect. After passing beneath the hideous railway viaduct, the grand proportions of Wren's masterpiece grow upon the spectator at every step, until, on a near approach, the close and massive iron rails conceal the entire lower portion of the edifice; and the spot at which the aspect of the western façade ought to have been most imposing becomes very unfavourable for obtaining a general view, in consequence of the impediment offered by the great clumsy rails. These, though not bad in point of design, are too close together, and are, moreover, exceedingly well calculated for harbouring London soot in quantity.

There can be no doubt that if the space be thrown open, as first proposed, that a garden of a suitable kind ought to be planned and carried into execution. The establishment of small expanses of turf, similar to those at the British Museum, which appear to thrive very well, would be a great relief and improvement, even without any other addition; but nevertheless, the judicious planting of a few trees would be of great value, as tending to soften the architectural lines of such a structure. Buildings always derive great advantage from the contrast of the irregular forms of foliage. The trees, however, should not be such as attain to a great size, as it is not desirable to conceal the architecture of the cathedral, but to group near it additional charms of colour and form. The gardens of the Vatican at Rome, which were planned with a view to their harmony with the grand architectural forms of St. Peter's and the papal palace, show how well gardening aids such a building; and the annexed engraving of it will serve to indicate the kind of effect produced by the juxtaposition of trees and plants with great buildings of ecclesiastical or palatial character on the continent.

It has fallen to the lot of very few horticulturists, in planning a semi-architectural garden, to work up to such noble features as the Palace of the Vatican and the dome of St. Peter's, and therefore their short-comings, whatever they may be, must be leniently judged. THE GARDEN suggested, within the first month of its appearance, the adoption of

some such means for enriching with a little warmth of colouring, and a little of the interest of vegetable life, the frigid-looking barren expanse of Trafalgar Square; but the suggestion did not fall in congenial places, and that open space, said magniloquently by its admirers to be "the finest site in Europe," still remains the hard, stony, bare expanse that it has ever been since its first formation.

While, however, I wish to show an example of the style of gardening round important public buildings on the continent, it does not follow that the same system is the one for us. On the contrary, I think it is demonstrable that the usual geometrical system, the fountains, the vases, the tubs for trees, &c., are wrong near a great building. They prevent the eye from enjoying peacefully that which it should be our main object to show to the fullest advantage—the building itself. A quiet bit of turf and a few groups of trees that thrive in London would probably produce a better effect in a place like

THE GARDEN IN THE HOUSE.

FRUIT IN TABLE DECORATION.

ALTHOUGH it is usual to speak of fruit and flowers as the principal materials to be employed in the decoration of a dinner table, I am not at all disposed to regard them as of equal importance in this matter. I know full well that very pretty tables can be arranged with flowers and foliage, and without fruit; but I doubt very much whether it would be possible to make a table look pretty with fruit, and without flowers and foliage; and I may say the same of fruit and foliage without flowers, unless the fruit bears only a very small proportion to the foliage used. This naturally leads on to the question, ought fruit to be used at all upon dinner tables? Before replying to this we should first enquire whether the fruit which it is proposed to place on the table is intended to be eaten at dessert, or is only to be used for decoration. If its employment is to be for decorative purposes only—and in such a case it is imperative that a duplicate supply of equally fine or even finer fruit be



The Garden of the Vatican.

St. Paul's than any more showy or pretentious styles of gardening. In any case the only really good effect obtainable from gardening in a small space near a large building must arise from a contrast of the forms and foliage of trees with the unchanging lines of the building. Views proving the truth of this statement are to be found in St. James's Park, and in many other places in various cities, though the planting was not intentionally designed to produce this effect. As to the trees which are fitted to plant in a space like that round St. Paul's, there need be little doubt on that point. The Plane and its pyramidal variety, the Lombardy and various other Poplars, the Locust tree, both the common and the tapering form, and the Gleditschia, a much neglected tree, are the best, but there are many others, such as the strongest growing Elms which would do nearly as well. NOEL HUMPHREYS.

handed round at dessert—then I see no objection to its limited use, either in single dishes or in mixed dishes of fruit, or in combination with flowers of a suitable character. But if it is proposed to hand round after dinner, and to eat, any of the fruit that has formed a portion of the decorations of the table during the previous part of the entertainment, I should certainly protest against the use of fruit in such a manner, and for the following reasons: If the fruit has been arranged with some flowers in a dish, its removal from amongst the flowers must of necessity disarrange that dish, and render it unsightly for the remainder of the dinner. If the fruit had been nicely arranged by itself in the lower dish of a vase, and the flowers were confined to the upper part, this might be a somewhat better preparation for what was to follow; but even then the removal of some or all of the fruit must leave an empty or a half-empty dish, neither of which is an ornament to a dinner table. Again, if the fruit be in single dishes, or in mixed

dishes, their removal for the purpose of handing round the fruit must spoil the general effect of the decorations, while their replacement after they have been robbed of any portion of their contents is as bad or worse than if they had not been put on again at all. If fruit must be used to serve the double purpose of being looked at for a considerable time first, and afterwards eaten, the only way to do it is to be provided with spare vases of flowers, or, better still, perhaps, with some other kind of ornament, which will go well with the rest of the decorations, and which can be put upon the table in the places of the dishes of fruit when they are taken off to be handed to the guests. If this is so cleverly managed as to effect a pleasing change in the character of the table arrangements, it would to my mind go a long way towards neutralising the remaining objections. These have reference to the palate, smell, and appearance. As far as the palate is concerned, I cannot help fancying that fruit which has been standing about in a room, warmed by fires and by lights, by hot soup, steaming dishes, and warm breath, never tastes so well as that which comes in and is served from a cool, fresh, airy room, where it has been kept until it was wanted. It may be that "hope deferred maketh the heart sick;" it may be that the actual falls short of the anticipated enjoyment in the eating of it in consequence of the taste being palled by the antecedent viands. It undeniably is the fact that fruit is less enjoyable and more unwholesome after dinner than at any other time; and there is much truth in the old saying which compares it to "gold in the morning, silver at noon, and lead at night." Perhaps some one may tell me that this is all fancy. Possibly it may be; I do not think so. But they cannot say the same respecting the test of the nose in the matter of fruit. To some persons the perfume arising from a Pine or Melon or a dish of Strawberries is so strongly perceptible that it deprives them of any enjoyment of their food; while others are made quite uncomfortable, and get a sick headache, much as some persons are affected by blooms of Hyacinths and Oleanders. It follows, therefore, that if fruit is to form any part of dinner table decorations, care must be taken that highly perfumed kinds either are not used at all, or if used, are kept near the centre of the table.

W. T. P.

CULTURE OF PLANTS IN ROOMS.

(Continued from p. 341.)

PROPAGATION BY GRAFTING.

This mode of propagation is seldom employed in room-culture. There are cases, however, in which amateurs, who devote themselves to the culture of special kinds of plants, may wish to try experiments in multiplying them in this way. Such plants are Roses, Camellias, Indian Azaleas, and some of the flowering shrubs which are frequently forced into bloom. The dry air of the room is unfavourable to this operation, but with proper care it is quite possible. Roses, flowering shrubs, and especially woody plants with deciduous leaves, are grafted when without leaves. The stocks should be wintered in a cellar, and in spring brought, while still in a dormant condition, into a cool room. Here they are watered, and when the buds begin to swell it is time to graft them. The most suitable mode of grafting these plants is by inoculation or budding with a pushing bud. The buds are taken from forced specimens, and are removed from the shoot in such a manner as to have a shield of bark attached. Should there not be room in the apartment, the stocks may be placed in spring on flower-stands in the open air, allowed to make their growth there, and then budded with pushing buds in May or June. These buds should be taken from shoots of the current year's growth. If the operation is successful, which is known by the bud beginning to sprout, the stock should be cut off a couple of inches above the bud, but the branches of the stock are allowed to remain until the shoot from the bud is at least an inch long. Then all the shoots of the stock below the bud should be cut off. If removed sooner, the flow of the sap would be too suddenly arrested, to the detriment of the growing bud. Budding with a dormant bud in the beginning of August should only be employed when a cool position, not too damp, and sheltered from frost, is at the command of the operator.

Instead of buds, scions may also be inserted in the bark or in clefts, or two plants may be grafted by approach, in which cases the stocks are to be brought into a cool room in spring and placed in a sunny position. As soon as the buds begin to swell, the stock should be grafted with sound scions in a state of rest. The graft is then wrapped round with thin paper or

a piece of bladder. This should be removed from time to time, in order to ascertain the condition of the graft. Should it begin to swell so much that the buds are in danger of being broken off, an opening should be made in the wrapper, and as soon as the buds begin to push, it should be removed altogether. The chief use of such a wrapper is to protect the graft from the injurious effects of the dry atmosphere of the room.

Evergreen plants, such as Camellias, Indian Azaleas, &c., are usually only grafted in a room when it is desired to graft fine new kinds on the older and commoner sorts.

The room is not a very favourable place for side-grafting or cleft-grafting these plants, as they are grafted in plant-houses. We know only one mode of grafting them in a room which can be employed with any prospect of success, that is the method in which the scion is placed in water. In spring, before the new growth has commenced, suitable scions are prepared and cut into pieces 4 or 5 inches long. At 1 or 2 inches from the lower end of these a flat longitudinal cut about an inch long is made, and a similar cut on the stock. The scion is then applied to the stock, so that the cut parts may correspond with each other, and they are then bound together. The lower part of the scion is then inserted into a phial of water, the mouth of which is closed with paper, and which is then fastened to the stock. The scion, by absorbing water through the cut at its base, will continue fresh until its union with the stock is effected.

The chief conditions for this operation are the complete exclusion of the room atmosphere, and the absence of moisture between the stock and the scion. Therefore such grafts should not be sprinkled overhead. With side-grafted evergreen plants, care must be taken in cutting off the part of the stock above the graft, as, if this is done too soon, the scion, which up to that time was growing well, will often go back. The safest plan is, when the scion has made some growth, to cut half through the stock a couple of inches above the scion, and let it remain so for some months, after which it may be removed altogether. Similar caution must be observed in the case of cuttings placed in phials of water.—*E. Regel.*

(To be continued.)

NOTES AND QUESTIONS ON THE GARDEN IN THE HOUSE.

Macademia ternifolia.—Mr. Kennedy, of Covent Garden, has just shown us a plant bearing this name, which is sometimes also called the Queensland Nut. It has been raised from seeds sent from that colony by Mr. Walter Hill. Its leaves are of a leathery texture, and are arranged in whorls of three, an inch or so apart, though sometimes near the top of the plant there are four, and even five in a whorl. In general outline the plant bears a resemblance to the *Theophrastas*, and judging from its present appearance, it seems likely to make a useful room plant, the leaves being of such a character as to well withstand washing, a process to which room-plants often require to be subjected.

Flowers of Herbaceous Plants in Covent Garden Market.—Passing through Covent Garden the other day, I noticed cut flowers of two hardy herbaceous plants in tolerable abundance, and it struck me that it might be worth while to grow a few of the more showy herbaceous plants in reserve grounds for the purpose of furnishing cut blooms, which at this season are not over abundant in most places, or in any case for the sake of variety. The plants alluded to are *Coreopsis lanceolata*, which continues blooming more or less throughout the summer, and in mild dry autumns till the end of October; and *Helianthus orgyalis*, a very presentable plant at all times, but which, coming into bloom in October, helps to enliven our borders with an abundance of its gay bright golden-yellow flowers, which are produced on long stalks. I saw blooms of this mixed with other flowers in a bouquet, and it struck me that this plant in particular would help to furnish a plentiful supply of cut blooms far into the month of October.—*G. S.*

AUTUMN SONG.

The Ash-berry clusters are darkly red;
The leaves of the Limes are almost shed;
The Passion-flower hangs out her yellow fruit;
The Sycamore puts on her brownest suit.

After a silence, the wind complains
Like a creature longing to burst its chains;
The swallows are gone; I saw them gather,
I heard them murmuring of the weather.

The clouds move fast, the south is blowing,
The sun is slanting, the year is going;
Oh! I love to walk where the leaves lie dead,
And hear them rustle beneath my tread.

—LILLIPUT LEVEE.

GARDEN STRUCTURES.

RENDLE'S SPAN-ROOFED GREENHOUSES.

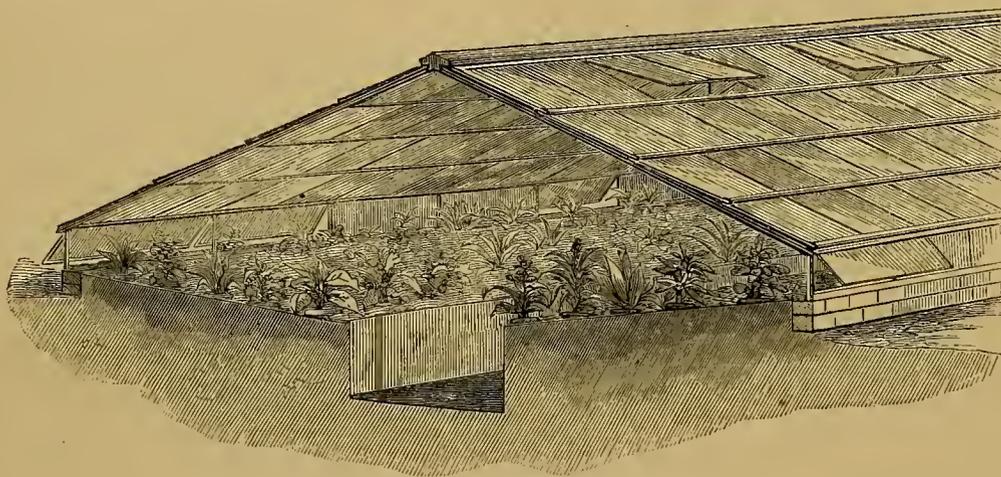
Few simple adaptations of glass in a cheap form for protective purposes have been so successful as these. Instead of moving or growing the crops under glass, the glass is placed over the crops where and only at the time when they need protection. By freeing glass from all adhesive and fixed glazings, sheets of it, in handy sizes, have become as portable as single bricks. Mr. Rendle abolishes glazing in the popular sense of the word, and adopts grooves, in earthenware, iron, or wood. The glass is slipped into these grooves and out again at pleasure. The grooves are sufficiently deep to hold the glass against wind or stress of weather. By a simple arrangement of the covering parts over the grooves, the glass can be instantly removed. When artificial warmth or a close atmosphere is requisite, metal grooves or wooden grooved bars are employed, which can readily be rendered air-tight; but for many of the most useful forms and sizes of Mr. Rendle's protectors, nothing is so needed, nor, indeed, used, but grooved tiles or common bricks, with a grooved tile as coping, and loose squares of glass. These, of various heights and breadths, are most useful in the forwarding of early crops, and the preservation of late ones of either flowers, fruits, or vegetables. As Lettuce, Parsley, early

Rendle's protectors, so there is no end to the purposes to which they may be applied, from the sheltering of a Cabbage to the finishing of a Pine-apple. Some complain that these protectors are not close enough. This is hardly consistent with modern notions, which attribute nearly all success in culture to chinks of air in the roof. Besides, the larger forms of the houses can be made as close as others; and as to the smaller ones, in which the glass lies on and in grooves in earthenware, experience proves that they are close enough for all practical purposes. Indeed, in addition to the occasional chinks and interstices between the edges of the glass, the two ends may be often left open with manifest advantage.

THE INDOOR GARDEN.

THE FAIRFIELD SYSTEM OF ORCHID CULTIVATION.

IN my last letter I confined myself pretty much to explaining how I try, by means of precipitation, to replace the loss of dew, which is the product of radiation; but, if I recollect rightly, I did not go into the question of why it is that we



A Span-roofed Pit, with sunk pathway.

Potatoes, Peas, Radish, Kidney Beans, or Cauliflower growers, or for maintaining a winter supply of salading, nothing can be more useful than these protectors. Then, as to flowers, fill a protector now full of Neapolitan or other Violets, Christmas Roses, or Forget-me-nots, and watch the results in early gathering; or place a few tall protectors over late cordon Apples, Pears, or Vines, or rows of Tomatoes, Chillies, or Cucumbers, and see how well they will bring them through to a late and, therefore, a valuable maturity. The annexed illustration represents one of the more ambitious forms of Mr. Rendle's invention. It is, as will be seen, a span-roofed house, 16 feet in width and 7½ feet in height, measuring from the floor of the central sunken pathway. Such a house as this must form a most useful storage for hedding plants, hard-wooded plants, &c. For these purposes it would require a hot-water pipe or hay coverings. Such a house would also prove a veritable treasure for the safe wintering of Walcheren Cauliflowers, to come into use during winter, or for the preservation and growth to perfection of clear crops of Lettuces and other salading. Then, in spring, what a capital place for early Potatoes, Peas, and Kidney Beans, to be succeeded by Cucumbers, Melons, Tomatoes, Capsicums, &c. What quantities of Strawberries could be gathered with a minimum of labour—which means little cost—were two borders planted full of plants with plump crowns, say, in January, and gradually forced! But it is needless to multiply cases; for as there is no limit to the area that may be covered by Mr.

cannot obtain a deposit of dew by radiation in our houses; upon which there seems to be a great deal of misconception among gardeners. Radiation only takes place under a clear sky, and is entirely prevented by a deposit of condensed moisture upon the glass roof of a stove, in precisely the same manner as is the case with a cloudy sky; therefore as this condensation will take place as long as the temperature outside is lower than inside, we can only prevent it by having the atmosphere of the house dry, and then a deposit of dew is out of the question from that cause. It is dangerous to run the temperature of a house too low in an evening, as the air becomes drier as it cools; and should the sky become clear, it is quite possible that the plants in the house may be frozen, though the air of the house does not go down to 32°, in the same way that ice is sometimes formed under water, before the surface of the water becomes frozen, or hoar frost upon grass, though a thermometer shaded from the radiation would continue to indicate some degrees above 32°. Practically, therefore, the usual course is the only one to follow, raising the heat and increasing the moisture before shutting up, and then banking the fires up to lower the heat quickly; there is no novelty in this, nor do I suppose there is much in my plan, but if I think it carries advantages, there can be no objection to my pointing them out; raising a steam and dashing water about are active means, but a fermenting bed continues all night to raise more moisture than the air can absorb, and each atom of such condensed vapour

carries with it very acceptable food. Many Orchids are pseudo-bulbous plants, and it is this partially bulbous nature that constitutes our difficulty in treating them during their season of rest; they require such a season previous to flowering, to enable them to make the effort nature requires; but as they in most cases retain their leaves, they cannot be allowed to get dry, not only to prevent the bulbs shrivelling, which is important, as some say, but because up to the last there is a consolidating feeding process going on, a storing up of food that is as needful for the new growth as the flower. My experience is that, even with deciduous sorts, a moist atmosphere does not prevent them from resting; and a study of their native climates does not lead me to the conclusion that cold is necessary to assist them to rest; I do not advise summer treatment during our winter, but what is the reason why we should impose upon them any longer season of rest than is natural to them in their own country? why should we expect them, without as much assistance from heat and light, to mature their growths in a shorter time? Therefore I think that it should not be considered extraordinary that it has suited mine very well to live in the same Pine stove all the year round.

In the northern part of South America there is no wet and dry season, so any day will serve for a spring planting, and winter never overtakes the sluggish; of the great Malay Archipelago the same thing may be said. In India the dry season is the hot season, and the growing time from April to November. Without special knowledge of altitude, or experience of the plants not liking the rays of the sun during summer, the safest plan is to have an ample supply of moisture, and never to shade when ventilation can keep the temperature in moderation; vary it to some extent to suit the season, and considerably between night and day; of course in winter there cannot be the same difference as in summer. I also hold a strong opinion that it is much safer to let a young plant grow all winter than to try to enforce a rest upon growths that are not made up; and if they do go to rest, start them again as early as you dare. Orchids are better managed now that they are cheaper, for gardeners treat them as if they expect them to grow. Lack of moisture and long rests have been the most general and certain causes of failure. In conclusion, let me thank you for permitting me to disclaim in your pages all claims to novelty in dealing with nature; on the contrary, my aim is rather to draw attention to old practices which have been overlooked.

G. H.

THE WELWITSCHIA AT KEW.

IN the note on the death of Dr. Welwitsch, speaking of *Welwitschia mirabilis*, you say it is "uncultivable." I am not aware that any earnest attempt has been made to grow it. Seeds of it were sown at Kew, after having been kept some time, and a plant that had been tossed about on the deck of a ship was planted by me, which made a few shoots, but it was ordered to be thrown away, because it appeared dead.

I believe this wonderful plant might be grown easily, if taken up and planted in a tub, giving it water at once, and sending it home bound down in the tub, or a case of small plants might be sent over. It may be said it would cost too much, but more money than that would cost is continually spent at Kew to get home plants that have been in the country for years, and that do not possess half the interest which such a plant as this would have. I consider it the proper work of Kew to show the public plants that are not to be seen elsewhere. Supposing it cost half the money that is spent every season there in bedding-out, what would that be? If plants difficult of cultivation and costly to obtain are not to be seen in our national collection, where shall we seek them? or what is Kew kept up for? Already, if we want to see the rarer kinds of Ferns, Pitcher plants, or Orchids we must go to Messrs. Veitch, of Chelsea. If we would see Alpines, or Trichomanes, and Hymenophyllums we must go to Messrs. Backhouse, of York. If Aroides and Bromelias, or the more inconspicuous Orchids are sought for, we must find them in the collection of Mr. Wilson Saunders, at Reigate. If one would study Cape Heaths, he must go to some nurseryman. Who would be surprised to see at an early date a plant of *Welwitschia mirabilis*, exhibited at South Kensington, with the card of a nurseryman attached to it?

J. CROUCHER.

Dendrobium Falconeri.—In compliance with the wish of "Niemand" for information respecting the cultivation of this lovely Orchid, we will simply state our mode of treating it, and leave him to judge of the success with which we have been rewarded. In potting, we use very shallow pans, thoroughly perforated all over with the exception of about half an inch round the rim; in these we place a layer of thin clean crocks, after which comes about an inch and a half deep of the potting material, which consists of sphagnum and very fibry peat, with a liberal sprinkling of potsherds broken to the size of Beet seed, and a moderate quantity of silver sand, all well mixed together. On this the plants are placed and fastened down; the roots are then covered with a little more of the compost, and a coat of live sphagnum completes the potting. They are then suspended near the glass in the East Indian house, where they remain growing summer and winter, until they are considered strong enough to bloom. When they have arrived at this state they are moved to a cool vinery to rest in the last week in December, and remain there till the last week in March, giving only sufficient water to prevent them from shrivelling. They are then taken back to the Orchid house, and again liberally supplied with water. They will be in bloom about the last week in May. We have had a plant thus treated which had 204 of its lovely flowers open at one time.—JOHN SHERRATT & Co., Nurserymen, &c., Knypersley Gardens, near Congleton.

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Lay's variety of *Adiantum excisum*.—This charming little Maiden-hair Fern is a stranger in our collections. It is an exceedingly beautiful dwarf-growing plant, the fronds seldom reaching more than 12 inches in length, though mine may be laid down as the average. It is densely crested in a peculiar and interesting manner. A stove temperature and ordinary stove Fern culture suit it well.—W.

Gomphia decorans.—This is a good winter-flowering stove shrub, bearing panicles of rich yellow flowers, that last well, and when one panicle is over, if it be cut off, the branch will soon send out more shoots that flower in succession. Being fond of bottom heat, it is best treated in the same way as an *Ixora*, otherwise it makes but slow growth. Cuttings of it strike freely if taken off with a little old wood attached to them, and plunged in a heat of 85° under a bell-glass or small frame. If put in during March, they will make nice plants for the following winter.—J. C.

New Maiden-hair Fern.—*Adiantum amabile* is one of the finest acquisitions that has been made for years. It is indeed a real gem, and no trouble is spared in nursery establishments to raise a stock of it. It is a stove Fern, of a strong growing type, and produces graceful fronds thickly set with large sized pinnae. The latter are deeply lacinated, a distinguishing feature in this fine Fern, which will make a handsome companion to *A. Farleyense*. Its rhizomes push through the soil, and throw up suckers or young plants sufficiently far from the parent to allow of their ready separation from it without having recourse to dividing the crowns. Ordinary stove Fern treatment suits it admirably.—W.

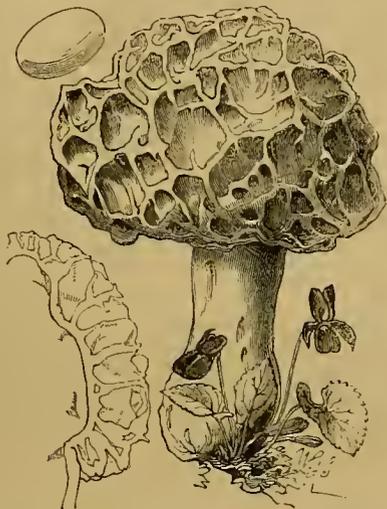
Anectochilus Dominii.—In paying a visit to Mr. Ward, at Leyton, a few days ago, I observed an excellent plant of this charming little Orchid in his stove. It was growing in a pan under a hand-light in the centre bed, where there was a little bottom-heat, but as the pan was placed on the surface of the plunging material, only a comparatively small amount of heat reached the roots. The plant was growing vigorously and was in the most robust health. Mr. Ward stated that the only attention it needed was to remove the handlight once a week in order to supply its wants as regards water. It has been in the same pan for some years past in a compost of rough peat and sphagnum. A portion of the old soil is annually removed and replaced with fresh material. The top part of the handlight is always tilted up; indeed, Mr. Ward attributes failures with *Anectochilus* more to keeping them too closely shut up than to anything else.—W. F.

THE KITCHEN GARDEN.

CULTURE OF THE MOREL.

WHETHER the Truffle or the Mushroom ought to be regarded as the queen of the edible fungi is a question we may leave gastronomes to decide; but in whichever order they are classified, few will deny that the Morel (*Morchella esculenta*), on account of its nutritive qualities, its fine aroma, and its delicacy of flavour, is entitled to rank immediately after them as an article of diet. Whilst, however, the Mushroom has long been raised artificially (chiefly in the environs of Paris) on a large scale and in a variety of ways, the Morel, on the other hand, has never until lately been subjected to cultivation, or found and brought to market in any very large quantities. It grew wild in the woods—chiefly in Pine woods—preferring a sandy soil. As far as the writer is aware, the first person to attempt its systematic production was M. Laurent Geslin, a farmer and landed proprietor at Bourg-la-Reine, in the north of France. Being a great lover of the esculent, it occurred to him one day to ascertain by trial whether it could not be grown in beds like the Mushroom. He commenced by making the beds as follows: Two-fifths dry stable dung, two-fifths ordinary light soil and road scrapings, and one-fifth wood ash, sowing in the same some Morel spawn—a fibrous, web-like substance, which had been collected for the purpose. This first

attempt at domestication, or rather artificial culture, turned out, however, very unsatisfactorily. The beds, which it should be mentioned had been laid in a dark cellar, were overrun with a fungus of another kind, and of his much-loved Morels M. Geslin obtained but five specimens. Fortunately, ill success, instead of discouraging him, only had the effect of inducing him to repeat his experiment with certain modifications, and in the end he was amply repaid for his pains and perseverance. The chief alteration he made was to reduce the quantity of manure in the beds by half, and to put in its place the same amount of soil taken from a spot where the Morels grew wild. The result of this change was a produce of 13 tons 6 cwt., equivalent to 6½ lbs. to the square yard. For several successive seasons the beds, without being resown, continued to yield very remunerative crops, and not until 1871—three or four years after their formation—did any signs of exhaustion show themselves. The commencement of April is the usual time for the beds to begin bearing at Bourg-la-Reine, and the gathering lasts uninterruptedly until the middle of July. On account of its finer aroma, M. Geslin cultivates the small brown Morel (*Morchella esculenta*) in preference to the larger grey variety. As in the case of Mushroom-growing, it is desirable to exclude, to a considerable extent, light and air, and to keep the beds constantly moist. The water required for the last-named purpose is, at Bourg-la-Reine, conducted by a gradual incline on to a wattle hurdle (placed over the bed), and allowed to trickle through. To facilitate its escape afterwards, and prevent the soil becoming over saturated or caking, the beds have a layer of Willow branches placed beneath



The Morel (*Morchella esculenta*). Woods, &c., in the spring; colour, pale buff; height, 3 inches to 5 inches.

them. Morels may be quickly and satisfactorily dried without losing any of their aroma; the plan M. Geslin adopts is to attach them by their stalks to a string, and hang them up in rows in a granary or other airy place. In this way they may be preserved until the new crop makes its appearance, or, if the grower prefers to keep them, still longer. Should he wish to dispose of them, they will fetch at any time in the market a price which well repays him for the time and labour bestowed on their cultivation. S.

WINTER CUCUMBERS.

EARLY Cucumbers, as a rule, are a profitable crop; but, as an old market grower once said to me, "It's not everyone who commences their cultivation with a view to profit alone finds it answer his expectations." Even now, with the aid of cheap glass and the steady genial heat furnished by hot water, failures are not uncommon. Perhaps one of the most fertile sources of failure is the injudicious application of bottom heat. Another cause of failure is the improper construction of Cucumber houses. I have always found a comparatively low-pitched roof to give the best result with the least trouble from scorching and red spider. I remember some years ago visiting a garden where a very expensive and apparently perfect house had been built for early Cucumbers, and furnished with the most improved methods of ventilating and heating; but it turned out a complete failure. In spite of the most careful interior management, the leaves were scorched and

became infested with red spider; and shading and air-giving to an injurious extent became absolutely necessary. The roof was taken off and the lights shortened, so as to considerably reduce the pitch of the roof, and the house afterwards answered admirably. I some time ago visited the grounds of a large London grower, in which was a novelty in the way of Cucumber houses. This was a structure 100 feet long and from 30 feet to 35 feet wide. It was built up a hill side, sloping to the south, and the boiler was set at the lowest end. The principal novelty, however, was the roof, which was nearly, if not quite, flat. The side and division walls were just high enough to give comfortable room to walk about. After the Cucumbers were cleared out in the autumn, the pits were filled with fermenting stable manure, and spawed with Mushroom spawn, and it formed a capital Mushroom house. When the Mushrooms were cleared off, and the days began to lengthen, Cucumbers were planted again. Of course a house of this kind would not be required in a private garden, and I merely allude to it as illustrating the principle. I have not the slightest doubt that from the 1st of March onwards a flat roof (or at least one with only sufficient fall to carry off the water) would grow Cucumbers and many other things also with less trouble than most of the sharp-pitched houses now built. A roof built at an angle to catch most of the sun's rays was all very well in the days of heavy rafters and sash bars, with small panes of glass. But the modern system of light rafters and large squares of glass has reduced the shade of the roof to a minimum. Everybody knows the heat of a structure in bright sunshine can be kept down by shading and a free ventilation. But Cucumbers are soft-leaved plants, that delight in a moist atmosphere, and when it becomes necessary in bright sunny weather to ventilate freely, the internal atmosphere becomes too dry for their well doing. I have always found Cucumbers do best under a comparatively flat roof, where it was not necessary to intercept the sun's rays by too much shading, and where the ventilation was just sufficient to keep the air in motion.

Referring to the subject of bottom heat, I know more than one large grower of early Cucumbers who always uses stable dung for bottom heat in the Cucumber houses, with hot water for atmospheric heat. The ammonia from the fermenting dung is most beneficial, and as the days lengthen and the bottom heat gradually declines, the roots descend into the decaying manure, and draw therefrom a vast amount of nourishment to support the heavy crops of fine fruit they constantly carry. A considerable amount of labour in root watering is also saved. In private gardens, hot water is much cleaner, and perhaps gives less trouble; and where the pipes are laid in a tank, and the tank at intervals supplied with liquid manure, a fair amount of success is attained. In growing autumn or winter Cucumbers the great thing is to start with strong, vigorous plants. One of the most successful winter growers I ever knew always raised many more plants than he required, and then selected the strongest. Another important point is, never to stop the leaders till they have reached the end of the rafter; it immensely increases the strength of the plants; it may probably delay fruiting for a few days, but planting a few days earlier will remedy that. I have sometimes, to get a few fruits very early, and to test the utility of giving the plants their heads, stopped a plant here and there; but the plants unstopped always beat the others in general prolificness and lasting powers. The knife should never be used among winter Cucumbers, except to cut the fruit. Never syringe with hard water as long as rain water can be obtained. Keep up the requisite amount of moisture by thoroughly damping paths and walls several times during the day, but avoid dashing it over the hot-water pipes when they are hot. We have latterly heard a good deal about the extension system as applied to Vines. Has anyone tried the same system with Cucumbers? I once tried an experiment leading in this direction in the following manner: I planted a house of Cucumbers on the 1st of September for autumn and winter use; one plant at the coolest end was not allowed to bear fruit, but the bearing plants nearest to it were gradually removed as it required more space, until January, when the remaining plants that had hitherto furnished the supply were removed and the single plant filled the whole house, some 34 feet long

and afforded till July an unfailing supply, when, as the house was required, it was necessary to pull it up. But what struck me most was the extraordinary development of stem and foliage. The bed had been well supplied with liquid manure, and a slight top dressing once a week of fresh soil, generally after each watering.

One word more as to the best compost for winter Cucumbers. Whenever I could get good turfy loam I have used that, slightly enriched with thoroughly decayed dung, in preference to anything else. But, failing loam of the requisite quality, I have used peat, with about one-fifth of its bulk of clay or marl, breaking the clay up when dry, so as to mix it easily and thoroughly with the peat. I have never been in favour of very light composts for winter Cucumbers; they require something substantial to lay hold of if any degree of permanence is desired. They will grow rapidly in light soils, but where long-continued bearing is wished for, a compost not too light gives the best result.

E. HOBDAV.

NOTES AND QUESTIONS ON THE KITCHEN GARDEN.

Importations of Onions.—These are imported at present in great quantities; not less than 1,000 tons were landed at Grimsby last week. They came from Antwerp, Rotterdam, and Hamburg.

Melon-growing in the Open Air.—This year I grew a Melon in the open air, the fruit of which weighed about 3 lbs., and was of remarkably fine flavour. The plants were planted at the same time as the Vegetable Marrows, *i.e.*, about the middle of May, and protected by a handglass, which was propped up when they began to grow, to allow them to run out. I had them under the name of "hardy German ridge Melons."—C. F. W.

ON GARDENING.

(Concluded from p. 365.)

GARDENING AS A PROFESSION.

I ought to have called this essay, in imitation of Shenstone, *Unconnected Thoughts on Gardening*, for now I am going back to speak of the gardening of the middle classes. A suggestion has been put forth in a daily journal, which is commonly in advance of the general intelligence of the age, to the effect that horticulture as a profession has been greatly overlooked. And I see that some of those periodicals which especially devote themselves to the interests of gentlewomen have taken up the suggestion, and recommended it as a means of self-support to impoverished English ladies. Writing as an individual amateur gardener, I can say with the utmost sincerity that it would be a very happy circumstance if at this moment I knew the name of a horticulturist who could come to me and earn his guinea for a little general advice with regard to my Roses and my fruit-trees. I complain that my Roses put forth no flowers—that they are luxuriant only in great straggling shoots—that their leaves are mildewed, and that they are in an unwholesome state altogether. "My dear sir," says the doctor, "how can you expect it to be otherwise? There are four dozen hardy, hungry Geraniums in the same bed with those two standard Roses. Of course they consume all the nourishment of the soil and absorb all the moisture. If you wished to fatten a couple of ducks, you would not turn four dozen voracious sparrows into the fattening house." Of course this is mere elementary knowledge, something that "everybody knows;" but it is astonishing how many mistakes we commit in matters which "everybody knows;" how the most obvious things escape our ken, in defiance of the plainest common sense. But, when the amateur is too far advanced to allow his gardener to commit such blundering as this, there are still many more abstruse questions to be put to the acute horticulturist—many diseases that he could arrest—many suggestions that he could make for reviving the drooping and strengthening the languid—for fertilising and invigorating everywhere, among fruits and flowers—for the right times for sowing and planting—for those surgical operations which are so necessary at times for the amputation of unhealthy or over-luxuriant members, which are weakening the whole tree. Of course we have our gardening books, and very useful they are. But there are some things not to be learnt from books. I confess that I have been trying to study the art of "budding Roses," from gardening books, for some years past, and it is as great a mystery to me as ever. A flower-doctor would show me how to do it in half-an-hour, or send a cunning assistant to do it for me. It has been well said that this is pleasanter work than amputating arms and legs, and entering at all times the tainted atmosphere of the sick chamber. And for my own part I never could discover that the perfect mastery of all the secrets of the vegetable world requires a less degree of intelligence than that demanded for a perfect knowledge of the mysteries of the human frame. The study and the practice of horticulture are alike boundless and inexhaustible. There are no limits to the range in this direction of experimental science, embracing as it does many of the most interesting fields of chemical exploration. If I had to begin life again, and, if such were possible, with my present experience, I should be much disposed to select horticulture as a profession. There is nothing healthier or pleasanter, more elevating or more refining; and I am of opinion with

the writer to whom I have referred, that good incomes may be made, especially by general practitioners who dispense their own drugs, or, in other words, issue the products of their gardens and glass houses. But I am writing rather from the customer's or the patient's point of view; writing selfishly in short, as one feeling a want which he wishes to have supplied. And, if I feel such a want, why may not thousands of others? Let Paterfamilias, who has more sons than he knows what to do with, think of this. Education may begin at home; and let the want be once admitted, we may be sure that we shall have no lack of schools and classes, professors and teachers, of Botany and Horticulture. The study should take a wide scope. It should embrace both the Useful and the Beautiful. Some, as in the medical profession, might select special branches of study and of practice; as we have our Aurists and Oculists, so we might have our Rosarians—a line especially adapted to practitioners of the gentler sex. Some might confine themselves to Floriculture; some might go in for Horticulture generally, and tackle the great subject of diseased Potatoes. To a man thoroughly understanding that branch of science, the cry of "Oh, doctor, save my crops!" would be uttered in as earnest language as that other cry, "Oh, doctor, save my child!" And, indeed, to save human food is the next thing to saving human life.

SNAILS.

In the meanwhile, there is much that we may learn for ourselves; even under the heaviest pressure of daily business, we may add, morning and evening, something to our store of horticultural facts. Nature, unsought, will make some new revelation to us every day, not only in the vegetable, but also in the animal world. There are a great number of lessons for us still to learn, but if one only lives long enough, one may learn them some day, even before our eyes are opened in another world. One of the most puzzling is about our "Garden Friends and Foes." There are some animals or animalculæ that prey on the vegetable kingdom, and I have been slow to understand their uses. They are most destructive both to human food and to floral beauty. I have often wondered whether the poet Cowper, who pattered about the Olney garden, much as I potter about mine, in undress, but with the substitution of a wideawake for a nightcap, would have refused to "enter" me in his "list of fricuds," for having killed, during some years past, as many snails and slugs as I could catch in *flagrante delicto*. I have often wondered what could be the use of snails. But even this question seems now to be solved, for I read that they are in great demand in Paris, for culinary purposes. One journal says that they are worth a halfpenny a piece. If so, I think I could pretty well pay my gardener out of my captures in the early morning, especially if there has been a shower of rain, or there is a heavy dew on the verdure, if they should be of the right kind for the pot.

CONCLUSION.

But it would be unseemly to conclude an Essay on Flowers by writing about snails; so I would fain divert the thoughts of the reader from these material considerations, and bring them back again to the sweet odour of the garden. How pleasantly has Cowley, alternating the satirical with the sublime, written in his "Garden" the following happy lines, in a more familiar strain than the rest of the poem:

Who that has reason and his smell
Would not among Roses and Jasmine dwell,
Rather than all his spirits eke
With exhalations of dirt and smoke,
And all the uncleanness which does drown
In pestilential clouds a populous town?
The earth itself breathes better perfumes here
Than all the female men, or women, there,
Not without cause, about them bear.

These last two lines contain a hard hit at the fops of the Restoration—the scented "female men"—and those of both sexes or of no sex who perfume themselves "not without cause." Still, we must exercise due toleration towards those, who, like Samuel Johnson and Charles Lamb, as I have above written, delight more in the heatitudes of the town. Even as regards perfume, there are those who think the odours of the town preferable to those of the country. I have just read in a pleasant little volume of "Johnsoniana" an anecdote in illustration of the great lexicographer's anti-rural tastes and habits. Johnson and Boswell had agreed that Greenwick Park was "not equal to Fleet Street." On which it is observed: "Johnson and his friend appear to have agreed in taste with a baronet very fashionable in the brilliant world, Sir Michael de Fleming, who, on his attention being called to the fragrance of a May evening in the country, observed, 'This may be very well; but, for my part, I prefer the smell of a flambeau at the playhouse.'" Such is the power of association. There are men not to be ruralised.

But is not this all for the best? Is it not well that there should be lovers of the town and lovers of the country? There may be optimists among both. It has been said of a good work of fiction that the end should come round to meet the beginning. Assuredly an essay should do the same. So I do not think that I can conclude this paper with anything better than the following further extract from the "Johnsoniana": "On a very rainy night Boswell made some commonplace observations on the relaxation of nerves and depression of spirits which such weather occasions, adding, however, that it was good for the vegetable creation. Johnson, who systematically denied that the temperature of the air had any influence on the human frame, answered with a smile of ridicule, 'Why, yes, sir, it is good for vegetables, and for the animals who eat those vegetables, and for the animals who eat those animals.'" Surely there is great wisdom in this, if we only rightly consider it.

GARDENING FOR NOVEMBER.

THE INDOOR GARDEN.

BY THOMAS BAINES, SOUTHGATE.

Conservatory.—Chrysanthemums, which are now fast coming into flower, should hold a prominent position in conservatories for some time to come. If the house in which they are to be placed is tolerably light, these plants will bear setting moderately close, yet do not crowd them, or the leaves will suffer and begin to decay before the flowering is over. The later varieties, which have been prepared to succeed the earliest flowering kinds, should be well attended to as regards thinning the flowers and removing suckers and useless side-shoots, which, if allowed to remain, impoverish the plants and correspondingly injure their ability to flower. If mildew presents itself, at once apply flowers of sulphur. Any stove plants, or such as require through the winter an intermediate house temperature, should now be removed from the conservatory to warmer quarters, or they will suffer; for the temperature of conservatories for the next six weeks ought to be kept no higher than just sufficiently warm to expel damp. From 40° to 45° at night will be ample, as a higher temperature shortens the flowering period of the greater portion of the occupants; it also stops roof climbers, or any plants that are planted out permanently in borders, from making growth at this season, when the less excitement they receive the better. Now that plants used for roof drapery are comparatively at rest and their growth matured, they should be thoroughly cleared of any insects with which they may happen to be infested. The first lot of Azaleas ought now to be placed in heat, to bring them into bloom. Select the earliest kinds for this purpose, such as old White or Fielder's White, which is better than the old variety. Choose such plants as flowered early in previous years, as they acquire a habit of coming into bloom about the same season, and do not need nearly so much forcing as plants require that have not been flowered early in previous years. If the variety of Azalea called *vittata* has been properly treated, it will now be in full flower without any forcing, and will be found most useful, as the flowers will not flag when cut, like such as have been subjected to artificial heat. The first lot of Hyacinths should be got into heat at once if they have pushed sufficiently, more especially as regards abundance of roots. Plants of Narcissus should be similarly treated. The best winter-flowering scarlet Geraniums, that will stand heat, should now receive every attention. A little heat, plenty of light, and no more water than will just keep the roots in action and the plants from flagging, will induce a greater disposition to flower than any other kind of treatment. Give every attention to the first lot of Primulas and Cinerarias, which should now be throwing up flower-trusses. Keep the Primulas as near the glass as possible, and give them just sufficient water at the roots to keep the soil in a healthy condition. Cinerarias should have more water, and the atmosphere for the latter must not be so dry as for the Primulas, or they will lose their under leaves. Pot more Hyacinths, Narcissi, Crocuses, Tulips, *Hoteia* (*Spiræa*) *japonica*, Christmas Roses, and the old *Scilla sibirica*, which is invaluable for its colour, and requires little or no heat to induce it to open its beautiful blue flowers. Poinsettias and Euphorbias will require a moderate amount of heat, say 60° night temperature, to induce them to bloom freely. A good batch of Rhododendrons, especially of the white variety *Cunninghamii*, should now be potted along with Ghent Azaleas. Pot Roses that have been induced to flower early in previous years should now be got indoors; many of the tea varieties will be furnished with numbers of unexpanded flowers, which require nothing more than the protection of a cool house to induce them to open; the plants should not be pruned, and should be well washed overhead with tobacco water, containing two ounces to the gallon of Gishurst compound; this will destroy mildew and red spider, as well as such aphides as may happen to be upon the plants. At this season it is especially necessary to be careful that no plants are introduced into heat that are infested, even if ever so little, with insects, which increase apace when brought under cover. A few also of the earliest flowering Epacris should receive a little warmth; they will require very little to bring them into bloom, and they will flower for months, and can be cut with impunity without injuring the plants. *Solanum Capsicastrum* and *Pseudo-capsicum* must be well attended to with water, for if that is not given to them much more copiously than to most other plants, they lose their leaves. A few plants of *Centaurea*, any of the varieties, but *ragusina* looks the best, may now be introduced into the conservatory with advantage. *C. ragusina* looks well anywhere; its silvery leaves are excellent for cutting for vases, or even for bouquets. Some of the early struck plants of *Hydrangea* will in all probability be showing flower, and should therefore be introduced at once into a little heat; they will come in at a time

when they will be much wanted, and will last in good condition for weeks. Pot on late struck *Hydrangeas*, using peat and a little sand for a portion of the stock, with loam and sand for the others; by this means in all probability the two colours blue and pink will be secured. *Pelargoniums* that have been shaken out and repotted should stand near the glass and receive as much light as possible. If there is not a house or pit in which they can be placed by themselves, they should be placed in the best situations available, where they can be accommodated with a night temperature of from 40° to 45° ; give plenty of air in the day-time, and keep the soil much drier than is required for most other plants, or the roots will suffer and the shoots become unduly attenuated. Where *Pelargoniums* are grown with the view of forming specimens, they should have all their shoots tied out, bringing them down as low as the rim of the pot. Seedling herbaceous *Calceolarias* should now be potted, using for the purpose large sized thumb pots; the soil should be good turfy loam, three parts; sifted leaf-mould, rotten dung, and sand, two parts. Keep them near the glass, with an atmosphere somewhat humid—similar, indeed, to that recommended for *Cinerarias*. Plants of *Lilium auratum* should now be repotted, taking care not to injure the roots in the operation. Remove the dead tops from *L. lancifolium*; re-pot where required, and surface dress others, using good sound loam, with sufficient sand to keep it sweet. Keep the soil from getting too wet, yet do not err on the other hand by having it too dry; the roots of these plants are always more or less in action, but for a time after the tops decay, they are impatient alike of too much or too little water. *Fuchsias* that have done flowering prune back and stow away for the winter, on their sides, in some place where they will be secure from frost, and where the soil can be kept dry. If pruned now, instead of just before they start into growth, they will not suffer from bleeding, which causes them to break weakly.

Stove.—*Ixoras* and *Dipladenias* that were recommended to be cut back last month will now have broken, and ought to be potted; the roots of the *Ixoras* should not be disturbed more than is necessary; merely remove a few inches of the surface soil, and furnish pots 3 inches larger than those they previously occupied, using nothing but good peat and silver sand. *Dipladenias* ought to be shaken half out of the old soil, without injuring the roots more than is necessary, using good peat, not too close, and plenty of sand. Keep the plants through the winter drier than the majority of the occupants of the stove. *Allamandas*, *Clerodendrons*, and *Bougainvilleas* should now be dried off, but not yet cut back, keeping the soil quite dry, and do not submit the plants to a lower temperature than 50° at night. *Caladiums* gone to rest, or that show signs of that state, should have water withheld, and should be placed where they will have not less than 55° or 60° night temperature. Any of the stock affected with mealy bug, scale, or thrips, wash thoroughly with "Abyssinian mixture," or Fowler's insecticide; 3 oz. to the gallon will kill thrips, 5 oz. brown scale, and for mealy bug and white scale, 6 oz. or 8 oz., according to the ability of the plants to stand a strong dressing. Where the strongest dressing is resorted to the plants ought to have all the tender shoots, if any, cut back. Where mealy bug exists, a vigorous effort should now be made, when the plants are comparatively at rest, to thoroughly exterminate it. We frequently hear it said that when once it has got possession of a collection of plants it cannot be got rid of; but that is a mistake. It is merely a question of time and perseverance. The moisture necessarily used in stoves causes the inside of the glass, wood, &c., soon to get coated with a dirty deposit, which should now be cleaned thoroughly off. Towards the end of the month get out the old tan and replace it by new material. If a good body of it is got in now, the heat which it gives off will, during the winter months, materially assist to keep up the necessary temperature, and, consequently, save fuel. The heating apparatus should be overhauled, to see that all is in proper working order. The cost of fuel at present is a serious one, which, in many instances, might be reduced by simply using additional piping. Whatever form of boiler is used, see that the draught is good and under proper control. A bad sluggish draught is a certain cause of waste, owing to the constant use which has to be made of the poker.

Fern House.—Here reduce the temperature and use less water at the roots and also in the atmosphere, so as to incline the plants to the comparative state of rest which is necessary to their making luxuriant growth when the season for such arrives; it will also harden the plants so as to make them in much better condition for cutting; for the season is fast coming when they are indispensable for mixing with cut flowers in vases, bouquets, &c., in quantity.

Azaleas.—Continue the treatment directed for last month, and, as soon as all the stock is tied, place them as near the glass as circumstances will permit, and give all the plants, large and small,

a good washing with tobacco water tolerably strong, to each gallon of which has been added 1½ oz. of Gishurst.

Hardwooded Plants.—Any plants in this department that were potted a month ago, and which were then kept a little closer than the general stock, may now receive as much air as the rest of the occupants, yet through the winter use additional care in watering them. The flowers of *Aphelaxis* frequently go blind without any apparent cause; examine them well at this season, as they will frequently be found infested with aphides, not easy of detection; they will exist on these plants, yet the plants appear to afford the insect so little sustenance as to render it so small as to be almost imperceptible to the naked eye, more especially as it never gets so numerous on these plants as it does on others.

Orchids.—Most of the plants in the East Indian department will now be approaching a state of rest, and must be treated accordingly by a lower temperature; 65° by night, with a rise of 10° by day, will be sufficient, and less water at the roots, yet do not punish the plants by either giving too little actually applied to them, or by keeping the atmosphere unreasonably dry. Many err by these extremes, and think thereby to force the plants to bloom. If the plants are properly treated during their season of growth by receiving a sufficiency of light and air, and not exhausted by the application of too much fire-heat, they will bloom satisfactorily without being punished, as is frequently done, to induce them to flower in a manner of which the treatment they have received during the growing season has not rendered them capable.

Heaths that were potted last month may now be treated, as to the air that is given them, similarly to the rest of the stock, but be careful with the water-pot, as the roots at this season do not lay hold of the new soil so quickly as in the spring. Clean out all dead foliage, and get the plants tied as soon as convenient. Admit abundance of air on all favourable occasions, but admit none at the sides of the house during fogs, only at the roof, which will act as a ventilator, letting the stagnant damp air escape.

THE FLOWER GARDEN FOR NOVEMBER.

BY GEORGE WESTLAND, WITLEY COURT.

THE almost uninterrupted continuation of wet which we have experienced during the past month has, in a great measure, retarded active operations in this department. No favourable opportunity should now be lost in planting flower beds with shrubs and spring-blooming plants. The great defect in flower gardens has hitherto been their uninteresting and bare appearance in winter and spring; but with the great variety of inexpensive plants which we possess so applicable for their winter adornment, there can be no excuse for defects in that direction. Vases skilfully planted with evergreens are also effective and graceful. *Arbor-vitæ*, *Junipers*, and such shrubs as the following are extremely useful for winter decoration, viz., *Yews*, *Arbutuses*, *Aucubas*, *Box*, *Cotoneasters* (grown in pots), *Euonymus*, *Hollies*, *Ivies*, *Laurels*, *Laurustinuses*, *Mahonias*, *Rhododendrons* (variegated leaved), *Skimmias*, *Periwinkles*, *Andromedas*, *Heaths*, *Kalmias*, and *Pernettyas* (charming plants when covered with berries in winter). The greater portion of these may now be propagated from cuttings, inserted firmly in the soil in lines in the reserve garden. A small portion of the old wood should be attached to each cutting, and in this way a stock may always be secured with but little trouble and expense.

Annuals and biennials may still be transplanted. Finish planting bulbs of all kinds. It is sometimes necessary to lift bulbs that are planted-out, such as *Crocuses* that form the young bulbs over the old ones, as they soon get too near the surface; therefore they should be lifted, divided, and replanted deeper. Garden *Lilies* are worthy of more extensive attention than they now receive, on account of their fine colouring and effect. To cultivate them successfully they require a deep, light, rich soil, free from stagnant water; indeed a prepared compost of two parts turfy loam and equal parts of leaf-soil and decayed manure, with a little sand, is a good and lasting one. When well established they should be disturbed as little as possible. *Lilium auratum* and the varieties of *Lancifolium* flower well when planted out, if the beds are mulched in winter. *L. eximium* and *candidum* are useful kinds for cutting, as are also the scarlet *Martagon*, *Chalcedonicum*, the *Tiger Lily*, and many others. The chief point to ensure success in their culture is early planting, for the bulbs should be planted before they emit fresh roots. Finish the planting of *Anemones*. Plant *Ranunculuses* for early blooming. Mulch *Hollyhocks* with short litter, or draw away a little of the surface-soil and place cinder-ashes around the crowns of the plants; the ashes will act as a preventive from damp and slugs. *Dahlias* should now be lifted. Cut the stems off to within two inches of the tubers, and place them root upwards in an airy place to dry for a few days.

Afterwards store them where they may be secure from frost, avoiding a hot, dry temperature where they would be likely to shrivel. *Canna* roots should also be lifted and similarly stored, or they may be protected in the beds, if the soil be light and thoroughly drained; it is, however, safest to secure a large majority annually by lifting, in case of accident. Frequently roll lawns and walks, and remove all dead leaves.

Shrubberies and Pleasure Grounds.—This is a favourable season for planting most kinds of ornamental trees and shrubs, which are worthy of every care and attention; for at all seasons they are very enjoyable, but more particularly so in winter. In planting and rearranging them it is well to aim at having them as perfect and symmetrical as possible, and this cannot be attained unless they have plenty of room and a suitable soil. Strive to introduce as much variety of colour and outline as possible. There generally exists too great monotony in the grouping and distribution of our trees and shrubs. Deciduous trees and shrubs should by no means be disturbed until the leaves have fallen. All plants that are too tender to stand over the winter with a slight protection should be taken up or protected where they stand. Whatever materials are employed for this purpose, they should be porous, for the quicker they are dry after the rain the better. Many plants often suffer from accumulated damp in the protecting materials. A very slight covering in most cases is all that is necessary. *Magnolias*, standard *Bays*, and *Laurustinuses* should have their stems bound with hay. The more tender kinds of *Roses* must also have attention in this respect. *Auriculas* and *Polyanthuses* which are now at rest should be watered sparingly, allowing a free circulation of air on fine days.

Pits and Frames.—*Carnations* and *Picotees* should be placed near the glass; air freely, taking off the lights in fine weather, and water sparingly. Plunge the pots in sawdust, spent tan, or ashes, to protect the roots in case of severe frost. The same is applicable to all half-hardy plants wintered in frames. Many plants that are comparatively hardy suffer more from a confined atmosphere than from actual frost, consequently more exposure will benefit them. *Calceolaria* cuttings may still be put in. Bedding plants should not be coddled so much as to weaken their growth. They winter safest when kept stocky by exposure at this season. Green fly must be kept under by fumigation, and mildew by dustings with sulphur. *Violets* should have their runners removed as they appear. Keep the general stock fully exposed during fine days. The earliest batch of *Hyacinths*, *Tulips*, *Narcissi*, &c., should now be removed from the plunging material and gradually inured to light and heat. Water freely, but do not saturate the soil, for if it becomes sodden poor flower-spikes will be the result. Avoid sudden checks, and encourage free growth as the leaves and flower-spikes are extending. Pot for succession in rich sandy loam, leaving the crowns of the bulbs just protruding above the soil. Many makeshifts are used as protecting materials, such as wooden frames, skeleton frames, or hurdles thatched with straw, and made into handy lengths. Have also at hand, in case of hard frost, a good supply of dried hay, Fern, and straw. Use fire heat as sparingly as possible at present; enough to expel frost or damp in continued wet weather is sufficient.

THE FRUIT GARDEN FOR NOVEMBER.

BY WILLIAM TILLERY, WELBECK.

Outdoor Fruits.—October has been another excessively wet month, more than 4½ inches of rain having fallen here up to this date. The soil is now in such a sodden state that planting fruit trees in the beginning of November had better be deferred till drier weather sets in, and if drainage operations are required to be carried out they should be pushed forward before any trees are planted. Where much planting is to be done, the ground should be well trenched, and the trees planted on mounds on the surface, and well staked and mulched, to secure the roots from the effects of severe frosts. As soon as the leaves are off the trees the pruning of *Apples*, *Pears*, *Plums*, and *Cherries*, may be proceeded with. This is a good time likewise for thinning the branches of overcrowded fruit trees in orchards, and for scraping the moss from the stems. The pruning of *Currants* and *Raspberries* may now be finished, but *Gooseberry* pruning had better be left till spring, in order to see how the buds fare with regard to birds, for if the winter is severe they often attack them wholesale. It is a mistake to dig near the roots of *Currants* or *Raspberries*, for they are very fibrous, and run near the surface, and when the weeds are destroyed it is better to mulch the ground with rotten manure than to dig it in. All the latest varieties of *Apples* and *Pears* will now be nearly gathered, and those already stored in the fruit room will want frequently looking over, to pick out such fruit as show the least symptoms of decay. *Tomatis* have been more than usually busy this year on our scanty crops of dessert *Apples* and

Pears, and as they peck small holes in the stalk end of the fruit it soon begins to decay. Blackbirds are, however, the most destructive birds as fruit-eaters with which gardeners have to contend, and this year, when fruit has been so scarce, their attacks have been more daring than usual. I have had some trouble with them here in a late Peach-house; when they found the lights open, they attacked the ripe Nectarines, but not the Peaches, and on a long wire-covered arcade, where dessert Pears are grown on the south side, and which could not be covered with nets, they have been very destructive.

Vineries.—The early vinery, if intended to be forced by the end of the month, should now be shut up, the wires and woodwork inside painted, and the Vines thoroughly cleaned and dressed with some insect-destroying mixture. Should the mealy bug put in an appearance in an early vinery, there is nothing surer to eradicate it (before beginning to force) than syringing both Vines and woodwork with water as hot as the men can bear it. If early Vines in pots have been properly rested, they may now be introduced into a slight bottom heat, and will produce ripe Grapes in the beginning of May. As late Grapes can be kept in bottles of water in good condition up till that date, there is, therefore, no difficulty now in having Grapes all the year round when required, provided the proper number of structures is allowed for their growth. As soon as the Grapes are cut, and the leaves fall, the Vines, in late successive vineries, should be pruned, the bones thoroughly cleaned, and the outside borders protected from heavy rains or snow. During the present dull, moist weather, late Grapes should be frequently looked over, and all decaying berries picked out; a little fire applied during bright sunny days, with plenty of air in circulation, will do more to keep Grapes sound than the use of too much artificial heat when the weather is damp and dull.

Peach-houses.—The outside border of the early Peach-house should now be protected with litter, and the inside border lightly forked over, some liquid manure being applied at the same time. The middle or end of the month is early enough to begin forcing, and the trees should be very gradually excited. A temperature of from 40° to 45° is high enough to begin with. When ripe Peaches and Nectarines are required early, it is best to force a few dozen of trees in pots, with the roots plunged in bottom heat in pits like vines. Some of the new early varieties of Peaches and Nectarines raised by Mr. Rivers are well adapted for early forcing.

Orchard-houses.—Now that the fruit is all gathered, little can be done but aiding the trees in pots or planted out to mature their wood well, by giving them plenty of air, light, and some artificial heat where it can be applied. Do not let the soil of the potted plants get too dry, and when all the foliage has fallen, top dress with turfy loam and a little bone-dust, or repot into larger pots, using the same compost.

Strawberries.—Those required for early forcing should now be under glass in pits or frames, as the first batch will want bringing into the early Peach-house or Vinery in the end of the month. I find Keens' Seedling to be still the best for this purpose if the plants have been potted early and well selected. The Black Prince ripens earlier, but it is subject to mildew, and the fruit is small and without flavour when ripened very early. Eclipse and President are two excellent varieties for the second early batch, and they bear carriage well when required to be sent a distance.

Cucumbers.—A temperature of about 70° with a rise to 75° on a sunny day will be a safe heat for Cucumber plants this month. It is better not to crop too severely, for the dull and cold mouths of winter are coming on when little growth is made in the way of foliage. If the bottom heat is furnished by means of hot water pipes, see that the soil does not get too dry over them. If this is found to be so, holes must be made here and there in the bed, and water poured in to moisten the soil for fear of danger to the roots.

THE PINERY FOR NOVEMBER.

BY JAMES BARNES.

ALL fruit swelling, and plants lately started and now showing fruit, should be placed together, in a snug department by themselves, or say in the warmest sheltered part of the fruiting pit, where they will be free from draughts and checks. Great care should be taken in removing and replacing the plants, so as not to shake them about nor expose them to draughts, or their pips will become ill-shaped and the fruit will swell unevenly. That the Pine-apple plant will remain as fresh and green as a Yucca when planted out of doors is a real practical fact with which for years I have been well acquainted; thus we see and hear at times of extraordinary productions of heavy, well-produced Pine-apples by some amateur who has bestowed upon them but little care or attention. The Queen Pine should not be chosen to any extent for winter fruiting, because it does not do well unless kept up to the mark by kindly swelling; nor must it by

any means receive a check or get deprived of heat. It only keeps a short time after being fully ripe in winter, even though placed in a cold place, be it ever so dry and healthy. Smooth Cayenne, Black Jamaica, Black Antigua, and Charlotte Rothschild are the best for swelling in the winter months, and with care and attention can be produced of good size, colour, and flavour. If succession plants in any stage of growth require shifting, it should be done carefully and methodically, without loss of time. No matter what month it is, snickers ought to be potted as fast as they are in readiness, in order always to have plants in every stage of growth. Gradually reduce the atmospheric heat and humidity, as the days darken.

THE KITCHEN GARDEN FOR NOVEMBER.

BY JAMES BARNES.

GLOBE and French Artichokes should have the leaves of each shoot gathered up snugly together on a dry day and a band of hay or straw placed around them, or they may be tied up with yarn or wires. After being tied up place a mulching of dry leaves, Fern, or straw around the crowns, so as to protect them from the severity of winter, and over this covering throw a little soil to keep it in its place. As soon as this is done, take off the bands and allow the leaves to hang about, for the bands are only put on to facilitate the mulching. Jerusalem Artichokes are always in greatest perfection when left in the soil they grow in; cut off the stalks a foot above ground, in order to know exactly where to find the roots when required. Mulch the surface of the ground between and about them a few inches in thickness with dry leaves, Fern, or litter; then regulate the cut stalks all over the mulching material, to keep all snug and to prevent interference from wind. The best system is to take out a trench on one side of the plot, trench out the Artichokes as required, and tumble into the bottom of the trench the stalks and mulching as the work is proceeded with; then plant middling-sized tubers, leaving the ground in rough ridges to be pulverized by the winter's influence, and in the following March tumble all down in a sweet mellow state, and sow a thin crop of Turnip Radishes, which will come up clean, crisp, and sweet. As soon as they are cleared, hoe and scarify the ground, all of which can be done before the Artichokes make their appearance. Save all small refuse tubers for poultry and game—all being fond of Artichokes. As regards Asparagus, attend to last month's instructions; place on gentle heat in succession strong roots for producing fine "grass" in the short days. In order to have Beet conveniently through the winter, take up the medium-sized, clean, and best coloured roots, and lay them in thickly in some shaded place under standard fruit trees, or in some corner where they may get a slight mulching in severe weather. Place the refuse in a corner by itself, and cover with litter and earth; this will be found a treasure in the early spring months for cows, pigs, poultry, or game, all of which are fond of Beet. If Broccoli plants be still growing too strongly, give them a check by raising them a bit with a strong fork and treading them down firmly again, or take out a small trench of earth and lay them in it so as to look northwards, and carefully cover up the stems with the soil. Look sharply after all that are coming on; break down their outside heart leaves or protect with a handful of clean leaves, Fern, or short straw, and if coming in too thickly and abundantly for the daily consumption, take them up as soon as they begin to turn in and replant in a sheltered cool corner where they can be readily protected with long straw, Fern, or evergreen boughs, or lay them into empty pits or frames.

Brussels Sprouts that are fully turned in, and those that are turning in faster than is required for present use, should be taken up carefully and laid in thickly in a cold sheltered situation, where they may be slightly protected in severe weather. This shift not only saves them from bursting open, but prolongs the season's crop, besides, the ground can be cleared and held ready for wheeling on manure, dredging, and trenching at convenience. This kind of treatment may also be adopted for all Coleworts that are ripe and ready for use, and likewise for Savoys before they begin to turn hard. Fill up all vacancies with strong Cabbage plants which lift with a ball from the pricked out store beds. Maintain an open healthy surface by taking advantage of fine dry days to use the hoe and hand scarifier amongst them. It is the close smooth-kept surface that retards their growth and luxuriance, and exposes them to the severe weather. How much longer is this coddling, smooth, sealed surface system to continue? I have often wondered at people picking up every little stone and surface scratching with a rake, like a hen in search of food, instead of boldly using the hoe. A smoothly raked surface is detrimental to the crops. Continue previous directions with Cardoons and Celery for early crops. On dry favourable days earthing up should be finished and protecting materials held in readiness for protection in frosty weather. Carrots that have finished their

growth and are now ripe may be taken up and stored in very thin ridges in a cold dry situation covered only with open Fern, Furze, Heath, or coarse straw, and thatched hurdles placed outside to keep all dry; for beds of young Carrots have in readiness dry leaves to place thinly between their rows when severe weather is about to set in, and boughs to lay over them to keep all in place. Young seed beds of Carrots, either on warm borders or in cold frames or pits, will require the use of plenty of dry dust, a quantity of which should always be boarded up for winter use. The beds should also be lightly protected with open haulm or Fern supported by boughs, if severe weather is likely to set in. Carrots sown in July of course are now a nice size for pulling throughout the winter, and are a most useful and valuable crop. Take care the frost does not catch you napping, and you will have abundance of young Carrots for use every day in the year, for they are always essential and valuable in the kitchen. It is in this respect that French gardeners have always been in advance of English ones, and they accordingly find ample remuneration for their attention. Take care to have Cauliflowers housed or in some way sheltered for the winter, especially those that are large enough to produce heads, which, though small, will be useful in the dead of winter to make a change for table. Previous instructions will give an idea, according to taste and convenience, how to store and take care of them. Continue to prick out, to pot, or to shelter October sown Cauliflowers, and keep them free from mildew, canker, long stalks, and decayed leaves, by airing freely, surface stirring, and dredging with dry dust and dry wood ashes; and well-grown, strong, and seasonable plants that will not bolt, will be the sure return. Place a succession of Chicory roots in boxes or pots, or lay them in sand in the Mushroom house or other dark place, where there is a little warmth to start them, or else store in pits or frames, so covered as to darken them enough to bleach the leaves properly. Small salads, such as Mustard and Cress, sow in small quantities twice a week.

Continue to bleach Endive in succession. Take up the last batch of plants that are large enough to place in pits, frames, or cold houses, and all the odds and ends of healthy plants of the different varieties, lifted with a ball of earth, and plant together on dry, sloping banks. They will be found useful for affording a supply till spring, if they are sheltered with evergreen boughs in winter. All kinds of Lettuces, whether Brown Cos, Green Cos, or Cabbage kinds, of a suitable size for winter use, should now be got together, and placed in nice, dry, open soil in pits, frames, or cold houses. Collect together all the next sized plants, and place them on warm, sloping banks, warm borders, or in turf pits. The Cos Lettuce sown in frames last month require strict attention through the short, dark days. In maintaining a healthy sturdiness or freedom from mildew and canker, they must be liberally aired day and night in mild weather, and the lights entirely taken off every dry day. Loosen the soil between and about them with a little stick or crooked wire, in order to have an open, dry surface. Take advantage of a few hours' sunshine to slightly dredge with fine dry loam and a little old mortar dust, and occasionally apply a slight dredging of dry wood ashes, to prevent the appearance of mildew. Carefully cover the sashes in severe weather, to prevent the inroad of frost. The covering must be removed daily to admit light and air, or enemies of some kind will be sure to crop up inside.

Look over stored Onions, clean and root out for immediate use all bruised, ill-shaped, bursted, or started bulbs; rope and shelve all sound ones. Keep autumn-sown ones clear from weeds; surface stir and dredge with dry dust on fine dry days. As regards Parsley, select a portion for protecting against severe weather, by placing a row of short stakes around the beds, and interweaving between them, to the height of 12 or 15 inches, evergreen boughs, Furze, long Heath, Fern, or straw, covering during night with a thatched frame or hurdle to fit. Take up strong roots of some early variety of Rhubarb in succession, and place them in a little heat to force. Take up Salsify and Scorzenera, and lay them in as recommended for Beet. The roots are always best when taken up for use out of fresh ground, in the same manner as Parsnips, for which purpose they may be mulched where grown. Keep Spinach clear of its own decaying leaves, and also of tree leaves blown about by wind at this season. Keep an eye after canker, and dredge the soil with hot air-slaked lime as previously recommended, and have some flat evergreen boughs ready for protection against severe weather. Select a quantity of nice-sized Turnips, and lay them in thickly, entirely covering the bulbs, in any sheltered corner, in order that they may be protected in frosty weather and be readily got at. By this means their quality and flavour are preserved, while those left unprotected are spongy, soft, and rank. As regards Peas and Beans, the old custom was to sow these for the earliest crop in November; such, however, is useless. The return for seed, shelter, and ground is nothing but a crippled, ragged, weak and unproductive condition on May-day. Early Peas sown on warm dry banks or borders about the 12th or 15th of December, I have found

to pass safest through the winter. Some sown in boxes in January, and carefully transplanted and protected by dry dust and boughs in February, or sown on strips of tough turf in a cold vinery or Peach house, and placed in rows on warm sloping banks or borders that have been autumn-trenched, forked on frosty mornings, and thoroughly pulverized and sweet, will then go a-head in a thoroughly healthy and even state, without fear of canker, the ravages of slugs, or the searing of cutting winds, if kept dusted and methodically sheltered. Early garden Beans may be sown in boxes or warm sheltered corners and treated as recommended for Peas; such treatment makes and maintains short-jointedness and fruitfulness. Turn over seed Potatoes and pick out all that are diseased. The store Potatoes should now be looked over and placed in secure quarters for winter.

Those who intend forcing should now place in small pots or boxes selected tubers of good early varieties and place them in heat; much time and expense of heating materials are thus saved. In the meantime get leaves, rank dung, or other fermenting material collected and turn over and incorporate them well together. Prepare for slight hot-beds by casting out a trench a foot wider than the frames right and left a foot deep. Put the best and sweetest of the soil at the back of the trench to place over the slight hot-bed, which should be 18 or 20 inches in thickness, and the layer of soil 6 or 8 inches; transplant the Potatoes in these beds when they make a growth of 2 or 3 inches. If prepared and ready, say two or three days previous to transplanting, all would be warm and genial for the tubers to start kindly into growth without check. It is astonishing how quickly young early Potatoes may thus be produced. Cast up the remaining soil all round the outside of the bed, and slightly cover the frames at night, according to the severity of frost. Take up a good batch of Seakale roots in succession and place them in heat and darkness of some kind, such as in Mushroom houses, cellars, under staircases, on a slight hot-bed out of doors with a beard or fence placed round it, and covered carefully with litter in spare pits and frames, dark corners in hothouses, &c. Protect the Seakale ground out of doors with litter, leaves, or rubbish, that the plants may not be locked in by severe frost when they are most required, which is from November to February; anyone can produce it either indoors or out after that date with very little trouble. Manure well and trench good land into rough ridges to be in readiness for planting a succession of Seakale roots next spring. The season has now arrived to set about draining all land requiring it, repairing old fences, and making new ones, clearing up all water furrows and ditches, making good all walks or road-edgings, whether formed of Grass, Box, Thrift, Thyme, Heath, Ivy, &c., or of stone, slate, tiles, or pebbles; the latter form the neatest and most durable of all edgings if well selected and methodically placed. Attend to the preparation and selection of materials for making new roads and walks, and repairing old ones. The first part of the mornings should be occupied in wheeling out manure on to spare ground. Continue to trench all empty ground into rough, open ridges, in order to receive the influence and benefit of the atmosphere. Collect together all kinds of vegetable and fruit tree leaves, short grass, edgings and sweepings of roads and walks, indeed any kind of decomposing refuse. Turn over these heaps on frosty mornings, and mix the compost with some air-slaked lime and salt, which should always be in readiness in some old shed. A portion of both should be added, in order to exterminate obnoxious insects and their larvæ. Thoroughly incorporate the whole of the constituents of the mass by shaking and turning, and form them into a ridge-shaped compost heap. It is truly wonderful what an invaluable heap of manure may thus be secured for the growth of all kinds of vegetables. Never burn any kind of refuse, or allow its valuable properties to escape in smoke; all prunings and rubbish that will not readily decompose, either char or stifle-burn, and thus turn to a more valuable account as manure. Such composts are not only valuable as fertilisers, and for the eradication of obnoxious insects, but they return to the soil essential and natural ingredients for again producing a wholesome and luxuriant vegetation. The waste of such manures, so frequently observable, and the poor, shallow, out-of-season and out-of-reason cultivation of the soil are most unsatisfactory.

OBITUARY.

At the Rectory House, near Sudbury, Suffolk, on the 22nd ult., the Rev. Edwin Sidney, well known as a popular lecturer on scientific subjects, the author of "Blight of the Wheat," and other works. He was a successful grower of Orchids, but being reluctantly compelled to give them up, on account of the heat attending their cultivation, he devoted his spare time to Grape growing, orchard houses, and Strawberry cultivation. He was a true patron of horticulture and the friend of gardeners wherever he went. All who knew him will regret his loss.

THE GARDEN.

—o—o—o—
 "This is an art

Which does mend nature: change it rather: but
 THE ART ITSELF IS NATURE."—*Shakespeare.*
 —o—o—o—

ARTIFICIAL BOGS—HOW TO MAKE THEM AND WHAT TO PLANT IN THEM.

LOVERS of gardens may be generally divided into two classes—those who admire a symmetrical and well kept garden with a brilliant display of colour, but who care little about the plants or the means whereby the effects are obtained, and those who love the plants themselves for their individual beauty, variety, and interest. The bedders out belong to the first class, and have long had it all their own way, but there are now happily signs that what I would call the artistic gardeners are going to have their turn. Alpines and hardy perennials are fast coming into favour again, and in a few years we may hope to see a race of young gardeners who really know something of herbaceous plants. The artificial bog has not yet received its due share of attention; but I am convinced the day is at hand when it will become as common and as much esteemed as the hardy fernery, and will be considered quite as indispensable an adjunct to a perfect garden. Bog plants have many charms of their own, and are so easily managed and so different in aspect to the ordinary class of garden plants, that they cannot fail to please; all that is requisite to form a bog garden is to form a hollow space which will contain water. The simplest way is to buy a large earthenware pan or a wooden tub, bury it 6 inches beneath the surface of the ground, fill it full of broken bricks and stones and water and cover with good peat soil; the margin may be surrounded with clinkers or tiles at discretion, so as to resemble a small bed. In this bed with occasional watering all strong growing bog plants will flourish to perfection; such plants as *Osmundas* and other Ferns, the *Carexes*, *Cyperuses*, &c., will grow to a large size and make a fine display, while the cause of their vigour will not be apparent.

A more perfect bog garden is made by forming a basin of brickwork and Portland cement, about one foot in depth; the bottom may be either concreted or paved with tiles or slates laid in cement, and the whole must be made watertight; an orifice should be made somewhere in the side, at the height of 6 inches, to carry off the surplus water, and another in the bottom at the lowest point, provided with a cork, or better still a brass plug valve to close it. Five or six inches of large stones, bricks, &c.; are first laid in, and the whole is filled to the top with good peat soil, the surface being raised into uneven banks and hillocks, with large pieces of clinker or stone imbedded in it, so as to afford drier and wetter spots; the size and form of this garden or bed may be varied at discretion. An oval or circular bed 5 or 6 feet in diameter would look well on a lawn or in any way-side spot, or an irregularly formed corner may be rendered interesting in this way; but it should be in an open and exposed situation; the back may be raised with a rockwork of stones or clinkers, imbedded in peat, and the moisture ascending by capillary action will make the position a charming one for Ferns and numberless other peat-loving plants. During the summer the bed should always contain 6 inches of water, but in winter it may be allowed to escape by the bottom plug. It is in every way desirable that a small trickle of water should constantly flow through the bog; ten or twelve gallons per diem will be quite sufficient, but where this cannot be arranged it may be kept filled by hand. The sides of such a bog may be bordered by a very low wall of flints or clinkers, built with mortar diluted with half its bulk of road-sand and leaf-mould, and with a little earth on the top; the moisture will soon cause this to be covered with Moss, and Ferns and wall plants of all kinds will thrive on it.

Where space will permit, a much larger area may be converted into bog and rock-work intermingled, the surface being raised or depressed at various parts, so as to afford stations for more or less moisture-loving plants. Large stones should be freely used on the surface, so as to form mossy stepping-stones; and many plants will thrive better in the chinks

formed by two adjacent stones than on the surface of the peat. In covering such a large area it is not necessary to render the whole area watertight. A channel of water about 6 inches deep, with drain pipes and bricks at the bottom, may be led to and fro or branched over the surface, the bends or branches being about 3 feet apart. The whole, when covered with peat, will form an admirable bog, the spaces between the channels forming drier portions, in which various plants will thrive vigorously.

Perhaps the best situation of all for a bog is on the side of a hill or on sloping ground. In this case the water flows in at the top, and the surface, whatever its form or inclination, must be rendered watertight with Portland cement or concrete. Contour or level lines should be then traced on the whole surface, at distances of about 3 feet, and a ridge, of two bricks in height, should be cemented on the surface along each of the horizontal lines. These ridges, which must be perfectly level, serve to hold the water, the surplus escaping over the top to the next lower level. Two-inch drain tiles, covered with coarse stones, should be laid along each ridge, to keep the channel open, and a foot of peat thrown over the whole. Before adding the peat, ridges or knolls of rock-work may be built on the surface, the stones being built together with peat in the interstices. These ridges need not follow the horizontal lines. The positions thus formed are adapted both to grow and to display Ferns and Alpine plants to advantage.

There is another way in which a minute stream of water may be turned to advantage, and that is by causing it to irrigate the top of a low wall; such a wall should be built 12 inches high, the top course being carefully laid in Portland cement. A course is then formed by bricks projecting over about 2 inches at each side, with a channel left between them along the centre of the wall, which must be carefully cemented. Small drain pipes are laid along this channel and fitted in with stones. Large blocks of burr or clinker are then built across the top of the wall, with intervals of 12 or 15 inches between them, and these are connected by narrow walls of clinker on each side, so as to form pockets, which are filled with a mixture of peat and sandy loam. The projecting masses of burr stand boldly above the general surface, and occurring at regular intervals give a castellated character to the wall, which may be about 2 feet high when finished. Hundreds of elegant wall plants find a choice situation in the pockets, which are kept constantly moist by the percolation of the water beneath them, while *Sempervivums* and *Sedums* clothe the projecting burrs. In fact, with *Wallflowers*, *Snapdragon*, *Cistuses* and *Sedums*, such a wall forms a garden of blossom throughout the whole spring and summer.

It is not necessary to give a list of the plants suitable for the artificial bog, for they are described in many works on the subject; but in addition to regular bog plants, almost all the choice Alpines will luxuriate and thrive in the drier and more elevated parts of the bog, better than in an ordinary border or in pots. Perhaps the most charming plants to commence with are our own native bog plants—*Pinguicula*, *Drosera*, *Parnassia*, *Menyanthes*, *Viola palustris*, *Anagallis tenella*, *Narthecium*, *Osmunda*, *Lastrea Oreopteris*, *Thelypteris*, *spinulosa*, and other Ferns; *Sibthorpia europæa*, *Linnæa borealis*, *Primula farinosa*, *Campanula hederacea*, *Chrysosplenium alternifolium* and *oppositifolium*; *Saxifraga Hirculus*, *aizoides*, *stellaris*, &c.; *Mimulus luteus*, *Cyperuses*, *Carexes*, *Calthas*, *Luzulas*, *Cardamine*, *Leucojum*, *Fritillarias*, *Marsh Orchises*, *Equisetums*, and a host of plants from our marshes, and from the summits of our higher mountains, will flourish as freely as in their native habitats, and may all be grown in a few square feet of bog; while *Rhododendrons*, *Kalmias*, *Gunnera scabra*, the larger Grasses, Ferns, *Carexes*, &c., will serve for the bolder features.

I have not space to enumerate the many foreign bog plants of exquisite beauty which abound, and which may be obtained from our nurseries, although many of the best are not yet introduced into this country; in fact one of the great charms of the bog garden is that everything thrives and multiplies in it, and nothing ever droops or dies, the only difficulty being to prevent the stronger plants from overgrowing, and eventually destroying the weaker ones. I need scarcely add that a small pool of water filled with *Water Lilies* and other water plants forms a charming adjunct to the bog garden.

Sydenham Hill.

LATIMER CLARK.

NOTES OF THE WEEK.

— ANOTHER gigantic Cucumber, the "Toang Qua," has been raised by Mr. Temple, of Packington Hall Gardens, who first raised the Seoly Qua. It resembles externally a large water Melon. It comes from China, and it is necessary to submit it to further trial before much can be said of its value.

— WE were glad to notice that the fruit from the Royal Gardens at Frogmore took a very high position at the great fruit show last Wednesday. We have no doubt that under the superintendence of Mr. Jones the great fruit growing reputation of Frogmore will be more than sustained.

— NOTWITHSTANDING the remarkably bad season for fruit growing now come to a close, the fruit shown at South Kensington on Wednesday last was superb in every way. The show was a very creditable one indeed, in spite of the small number of prizes offered (for an "International" show), and was a credit to our fruit-growing gardeners. Many of the collections to which no prize was awarded possessed the highest merit.

— AN American lady amuses herself with the polite hypocrisy of society in a curious way. She has an Orange plant in her parlour which bears neither bud nor blossom, but she has had two full-blown flowers and a half-opened bud of wax placed upon the barren stalk. Her callers all admire the sweet perfume of the lovely flowers, and the gentlemen have noticed that the bud has expanded considerably since they called before.

— MR. RUTLAND, gardener to the Duke of Richmond, at Goodwood, showed among the various fine collections of Apples, sent to Kensington on Wednesday last, specimens of Calville Blanc, from a standard, as fine as the French specimens which bring such high prices in our own and other markets. Therefore in warm southern districts this variety is worth a trial as a standard tree.

— THE beauty of the Golden Pippins, with which Mr. Rutland, of Goodwood Gardens, won the first prize the other day at South Kensington, was well worthy of record. They were of a beautiful rich and clear golden colour throughout. This they owed to being grown on a south wall. Specimens from standard trees were not nearly so well coloured.

— MR. CUNNINGHAM, gardener to Lord Ebury, at Moor Park, has recently grown fruits of *Passiflora macrocarpa* as large as well-grown Vegetable Marrows. We wish the flavour of this fruit was as remarkable as its size. To us it and also the Granadilla seem very inferior to the delicious fruit of the edible Passion-flower (*P. edulis*) when fully ripe.

— MR. FENN, of the Rectory, Woodstock, showed a number of capital bunches of the Esperione Grape at the International Show on Wednesday. From this Grape, which Mr. Fenn cultivates with great success on walls, he annually makes nearly a hundred gallons of good wine. The Esperione is one of the best of all Grapes for out of door cultivation.

— THE magnificent specimens of Duchesse d'Angoulême and other Pears sent to Kensington from Jersey the other day are fresh testimonies to the fine Pear-growing climate of the Channel Islands. We have no doubt they will soon become as famous for other first-class Pears as they now are for the Chaumontel. This seems to indicate that a marine climate with enough sun is very beneficial to the Pear.

— THE size and beauty of the varieties of Apples sent from Nova Scotia to South Kensington the other day were very remarkable. We have seen some fine Apples in the Eastern States, and on the Californian foot-hills; but had no idea that Nova Scotia could produce such noble fruit. The Ribston Pippins sent were much larger than they ever grow with us. The fruit suffered very much from bad packing, but withal its high quality was fully evident.

— THE culture of the Olive tree and the manufacture of oil from its fruit is gradually becoming a leading industry in California. The character of the climate, and the soil of the valley of Santa Barbara and of the foot-hills of Santa Inez, for sixty miles along the coast, are adapted to the production of the finest varieties of oil. It is predicted that that portion of the State will eventually be numbered among the most celebrated oil districts of the world.

— WE notice the fresh green leaves of the white Lily pushing up under the Azaleas and Rhododendrons in Hyde Park. They will be much happier during the winter in such places than exposed in borders, and we have often spoken of the fine effect of Lilies in such company in summer. As some of our choicest dwarf bulbs, especially those of the southern hemisphere, come up in autumn, it would be well to afford them the shelter of small shrubs, such as *Daphne Cneorum* and the *Pernettyas*. Exposed on bare borders, these delicate bulbs generally suffer so much that they finally perish.

— WE fear the lovely *Urceolina anrea* is not sufficiently known as a valuable autumn-blooming plant. Its gracefully drooping golden bells, with green and white fringe, make it as distinct as it is beautiful. It is new, and has been for some time past, in full beauty. Every collection of stove plants should possess it.

— THE Epping Forest Commissioners have granted an order, on the application of the City of London Solicitor, for preventing further destruction of trees on any of the lands that have been forestal or common during the last twenty years.

— MR. PEACOCK'S very complete collection of succulents at Hammersmith is still being enriched under the care of Mr. Croucher, whose knowledge of these plants is probably unique. No less than five first-class certificates were awarded for new species on Wednesday last by the Floral Committee of the Royal Horticultural Society.

— WHAT has become of a Potato introduced from Chili some 40 years ago by the Royal Horticultural Society? It was called the Asparagus Potato, from the resemblance which its tubers had to the blanched shoots of that vegetable. After its introduction it grew well and spread rapidly; but somehow or other it now seems lost to the country. For table purposes, its long narrow tubers were delicious.

— IN the beautiful group of autumnal flowering Orchids and other plants, shown by Messrs Veitch at South Kensington on Wednesday last, the most conspicuous objects were plants of *Aphelandra aurantiaca Roelzii*, with its large slightly silvered leaves and fiery crests of brilliant Orange-red blossoms. It is worthy of a place in every stove where the finest autumn-flowering plants are grown.

— AGAIN the grand old Vineries at Berkhamstead have won Laurels for their worthy owners, the Messrs. Lane, who were the chief prize takers at the International fruit show just held. Their Muscats were as usual magnificent, and the collection of 18 different kinds of Grapes for which the gold medal was awarded was excellent.

— MR. HARRISON, for the last ten years manager of the beautiful gardens at Osmaston Manor, Derby, has been appointed head gardener at Knowsley, the seat of the Earl of Derby. We are pleased to find that such a thorough practical gardener has been appointed to conduct the affairs of so important a garden, and we have every confidence that the general state of cultivation in the above gardens, under his able management, will be second to none in this country. He has conducted the affairs of the very extensive and beautiful gardens at Osmaston Manor for the last ten years, with great credit to himself and satisfaction to his employers, and we trust that he will live long to enjoy his new appointment, and carry on the garden operations at Knowsley with his well-known energy and success.

Dinner to Messrs. Keynes and Frost.—On Wednesday evening last Mr. Keynes, the veteran florist and nurseryman, of Salisbury, and Mr. Frost, the well-known planter of the noble Pinetum at Dropmore and head gardener there, were entertained at dinner by a number of friends at the Horticultural Club. About seventy-five sat down to dinner, and Mr. John Lee, of the Royal Vineyard Nurseries, Hammersmith, took the chair. The proceedings were of the most agreeable character. Everybody present seemed to wish to do honour to guests who so well deserve it. We trust such pleasant reunions will henceforward be more frequent in the horticultural world.

Chrysanthemums in the Temple Gardens.—These gardens are familiar to all who take an interest in Chrysanthemums, and as they are open to the public every week day, everybody who chooses can pay a visit to these winter favourites. In both gardens, the plants are grown entirely out of doors, summer and winter; and, although in the heart of London, they attain the greatest perfection. In each department there is just now a grand exhibition of these flowers, consisting chiefly of large-flowered kinds. In the gardens of the Inner Temple, the pot plants are arranged under a temporary glass covering with canvas in front, and in those of the Middle Temple under wooden frame work, covered with canvas. Outside are beds and borders filled with Pompei varieties, all of which are now in great beauty. Among these dwarf sorts may be found great variety of colour, from pure white to deep crimson, and the different shades of yellow and buff. The plants are all of one year's growth, the point being to secure cuttings and offsets as early as possible, and even now, the operation of striking cuttings for next year's display has been commenced. These gardens, which form pleasant recreation grounds for the London public, have received considerable additions, arising from the formation of the Thames Embankment, which will doubtless next year be turned to profitable account, in the way of floral embellishment.

GARDEN DESTROYERS.

TORTRIX (RETINIA) BUOLLIANA.

WHENEVER a Coniferist finds the young shoots of his Pines giving way before the attacks of some hidden insect enemy that is eating away the pith of the shoots, he is apt to jump to the conclusion that the culprit is *Hylurgus piniperda*. It is an even chance, however, that he is wrong, and that it is a tiny moth, called *Retinia Buolliana*, or one of its allies, for there is a little group of them, for the reception of which the genus *Retinia* has been formed. Let him break open the fading shoot, and search in the bored heart for the insect that is at work. If it is a beetle, it will, no doubt, be the *Hylurgus piniperda*; at any rate, having got it, he has passed from the region of conjecture into certainty. If he does not know the beetle himself some one else will, and there are plenty of entomologists who will have pleasure in giving the information. If it is the *Hylurgus*, it is there in its perfect state, merely providing for the wants of the day.

It is unnecessary to consider the case of his finding a moth in the shoot, for that is a contingency which will not occur; but he may find either a caterpillar or a pupa, and then he may be pretty sure that it is the larva or pupa of this or some other species of *Retinia*. The larvæ of *Hylurgus* are never found in young shoots; that species passes the larval stage under the bark of dead wood, and if found the larvæ would

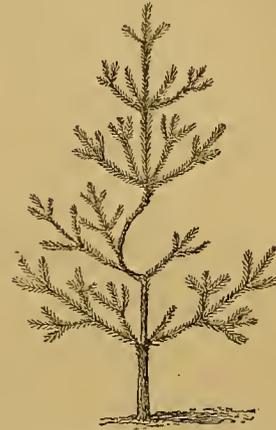


Retinia Buolliana, natural size and magnified.

be white, and without legs, like maggots, not brownish or greenish, and provided with legs and prolegs, as the larvæ of moths are. So the pupa of the beetle, although it becomes pale brown before it turns into the perfect beetle, is always obviously an immature beetle itself, not a case out of which something is to come; while the pupa of these moths is a chrysalis, or thin case, inside which the perfect moth rests separate and distinct. It may, however, happen that he finds nothing living

in the bored shoot; but even then he is not absolutely without some indication to guide him to the true culprit; the tunnel is either clean and tidy, or encumbered with the dirt and *débris* of the last tenant. If the former, it has been the *Hylurgus* that made it; if the latter, one of the *Retinias*. A perfect insect eats little and makes little mess; a larva eats voraciously and leaves the whole place where it has been, encumbered with its *débris*.

The species of *Retinia* which is figured in the woodcut is *Retinia Buolliana*; the perfect insect is shown both of its



Young Fir tree injured by *Retinia Buolliana*.

natural size and magnified, and the caterpillar is also magnified. The latter is of a dull greenish-brown colour, paler below, with the head or shield on the first segment, and the feet shining black, and it has many little black dots, from which spring black hairs, on its body. The pupa is reddish-brown. The moth has the fore-wings of a bright light burnt sienna colour, with silvery white markings, and the hind wings dull brown; the fore-wings imitate so exactly the colour and appearance of the bark of the Scotch Fir, that it can hardly be distinguished from it, when resting motionless upon it. The larva lives in the buds and extremities of the young shoots of the Pine tree, such as the Scotch Fir, or the Pinaster, or the Austrian Pine, &c., whence it is called in Germany the *Kiefertrieb-wickler* (Pine-boring Tortrix).

The eggs are laid in July or August, and are deposited near the base of the bud. The young larva makes its way into it, grows with it, and hollows out a gallery in the heart of the shoot, on which it feeds, eating its way upwards. The juice or resin flows down the gallery or tunnel, and escapes at the hole of entrance, where it accumulates, forming a lump of whitish resin, as shown in the woodcut. The larva passes the winter in its gallery, or under this resinous mass, and in May passes into the chrysalis state, and the perfect insect emerges in July.

The effect of the attacks of this insect, and of others with similar habits, is to render the trees where they are common often deformed or distorted. The leading shoot being destroyed it is replaced next year by lateral competing shoots, which often are again destroyed in the same way, and, before it gets a new straight leader established, the tree becomes irretrievably bent, as shown in the above figure. It has long been a severe scourge in Germany, and extends from Sweden and Norway to the south of Europe, following the Pine wherever it is to be found, and where it is absent being absent too. It seems to make its way very slowly where the Pine is artificially introduced, an instructive fact for the students of geographical distribution. Thus, both in France and in this country the planting of the Pine has immensely increased during the last century, yet this species is still rare in both countries, but certainly increasing.

A. M.

The Goat Moth.—I shall be much obliged if any of your correspondents can inform me of anything which is an effectual preventive, or even check, to the ravages of the caterpillar of the goat moth. A young Wych Elm (of about a dozen years' growth) was so spoiled by these marauders that we had to cut it down last year;

and I have just had the head of another fine young Wych Elm cut out in consequence of its being split down, owing to the attacks of the same caterpillars. This last tree was one of most thriving growth, about fifteen years old, and has always till this season appeared to be in a most flourishing condition. It has now been so much damaged that we shall, I fear, have to grub it up. When the caterpillars have attained some size, it is not difficult, and affords great satisfaction, to draw them out of their holes with a wire bent into a hook at the end. But this cannot be done with the small ones, though they may, perhaps, mostly be destroyed by poking a wire about in their holes. This is, however, a long and tedious process where there are many caterpillars about the tree, and if any wash could be recommended which, while not hurting the tree, would kill the caterpillars, and also prevent or check future attacks, it might be useful in cases where the mischief was discovered early. The caterpillars are said to remain in the trees for three years, during which time they increase much in size. We have taken out five or six dozen from one tree, varying from 2 to 4 inches in length.—*DENDROPHOLITE, Croydon.*

THE INDOOR GARDEN.

BEGONIAS.

How few amateurs, or in fact, gardeners, care to grow these beautiful plants, which are so peculiarly suited to make our plant houses gay and to decorate our dwelling house apartments during the dulllest portion of the year. The Messrs. Veitch of Chelsea have been persistent growers of this family of plants, and during the past few years have introduced many new and beautiful species, and have also been busy hybridising them at home. Begonias, it may be mentioned, require no extra amount of skill as regards their management, and thus may fairly be said to be within reach of all who possess the accommodation of a cool stove. As regards window decoration, many of the flowering kinds could not perhaps be managed successfully all the year round in that way, yet we are quite sure that most of them will stand a long time in flower in a dwelling house.

Begonias are widely distributed over the globe, being found in both the East and West Indies, in various parts of Africa, Mexico, on the continent of South America, as well as the adjacent islands, but with the exception of some few species, which are natives of Western Tropical Africa, they generally affect high regions. This is a fact worth the notice of the amateur, because it is a sure sign that they may be grown in a comparatively low temperature. We have had them grow well and flower profusely in a temperature ranging from 50° to 60°. Of course in the summer season the thermometer will run up considerably higher with sun heat, but that is of no consequence, provided a moist atmosphere is maintained with a due proportion of air; at the same time the plants must be sheltered from the direct rays of the sun. In potting be sure that the drainage is good and effective, and for soil use a mixture of peat, loam, and thoroughly decomposed manure in about equal parts, adding a portion of silver or sharp river sand. They enjoy a liberal supply of water to their roots, and a moist atmosphere when growing, but I have invariably found that they do better if not syringed overhead; therefore the floors and stages should be moistened with the watering can, instead of giving it them overhead. The style of growing Begonias will entirely depend upon the requirements of the amateur. For instance, if the space allotted to these plants is limited, then plants of moderate size only can be grown, but if the space is ample, then large or even specimen plants can be had, which will be very effective when in bloom.

The following brief list comprises some of the very best kinds, all of which will be found well deserving the attention of both amateurs and gardeners.

B. intermedia.—We commence with one of the newest kinds, not simply because it is new, but because it is one of the very best. It is a garden hybrid between *B. Veitchii* and *B. Boliviensis*, and was raised by the Messrs. Veitch. The plant in question is of erect and free branching habit, and attains a height when well grown of about 18 inches; the leaves have much the form and substance of *B. Veitchii*, but are toothed like *B. Boliviensis*. The flowers are large, very freely produced, and of a deep rich vermilion red. It succeeds in a greenhouse.

B. Digswelliana.—Another garden hybrid of great beauty, well adapted for the decoration of apartments during winter; erect in habit, with small dark green leaves. It produces an abundance of its branching panicles of flowers, which are light pink when open, whilst the buds are deep crimson.

B. rosæflora.—A plant of recent introduction; extremely hand-

some, but still somewhat rare; the leaves are broad, light green, and somewhat uneven on the upper surface; the spike is erect, bearing large deep rosy-red flowers of great substance. It comes to us from the mountains of Peru, and is tuberous rooted. These tuberous kinds all require a period of rest; after blooming they lose their leaves and remain dormant for a short time. Care must, however, be taken that they are not kept quite dry, or the probability is that death will ensue, and just when the amateur expects to see them start into fresh growth.

B. Chelsonii.—This plant is another of the splendid hybrids for which we are indebted to the Messrs. Veitch, being the result of a cross between *B. Boliviensis* and *B. Sedeni* (itself a hybrid). It is of free growth, the leaves being of a dark green in colour; flowers large, drooping, rich orange suffused with deep red. Independent of its rich colour, its value is considerably enhanced by its continuing to bloom all through the dreary winter months.

B. Pearcei.—This is a tuberous rooted species, introduced and named in honour of Mr. Pearce, who was one of the most indefatigable collectors that ever left these shores. The habit is dwarf; leaves on the upper side dark velvety green, with lighter veins, whilst below they are pinkish red, mottled with light green; flowers large, bright yellow. A most desirable plant.

B. semperflorens.—This is a dwarf, free-blooming and very handsome plant, suitable alike for the decoration of a lady's boudoir or the dinner table. The leaves are somewhat ovate, serrate at the edges, and of a bright shining green colour; flowers large, white, and produced from January to May.

B. fuchsoides.—Amongst all the members of this family, none can surpass this species for chaste beauty. Grown in the form of small specimens, it is impossible to imagine or produce anything more elegant for the adornment of the dinner-table. If not required for indoor decoration, when grown into large specimens it is equally beautiful, and if trained up a pillar or rafter in the plant stove, it is really lovely. The leaves are small, oblique, and dark green. The flowers are produced in abundance, and are of a vivid scarlet, and drooping. No collection of plants, however small, should lack this gem, and no lady should be without it in the drawing-room.

B. manicata.—In this plant we have ornamental foliage combined with large flowers. The leaves are large, oblique, and green, the footstalks being ornamented with bright red frill-like fringes. The flower spike is erect and much branched, whilst its numerous flowers are of a delicate soft pink. It blooms from January to May.

B. dipetala.—A superb plant, flowering the whole of the winter and spring. It is erect in habit, with oblique cordate acuminate leaves, which are serrate at the edges and dark green. The panicles are drooping, bearing a profusion of soft rose-coloured blooms.

B. Sedeni.—Another of the Chelsea hybrids, having *B. Boliviensis* for one parent, and, like it, having tuberous roots. It is remarkably free both in flower and growth, bearing, even on small plants, a profusion of large rich magenta-coloured flowers, and it succeeds in a greenhouse temperature.

B. lætevirens.—An evergreen kind, with large peltate dark green leaves. The flowers are large, and are produced in great abundance; pure white, delicately suffused with rosy-pink. It blooms from January to May, and is admirably adapted for the decoration of apartments.

B. diversifolia.—Alas, that we should have to say that we have not seen this plant in an English garden for a long time! A year or two ago, when travelling in Germany, we saw it in a private garden, but in very poor condition. It is one of the very best for winter decoration, producing rich rosy-cerise flowers in abundance, and it continues in perfection a very long time.

B. Boliviensis.—A fine tuberous-rooted species, which has been one of the parents to many beautiful hybrids. It grows some two feet high. Leaves bright green, whilst the flowers are of a rich, bright, shining red. It is more a summer than a winter bloomer.

B. discolor.—This fine old plant, which is sometimes called *B. Evansiana*, we name especially for a window plant, its constitution rendering it admirably adapted for that purpose. It is a robust grower, with an erect stem and broad leaves, dark green above, stained with dull purple below, and bearing quantities of large, pure white, delicately fragrant flowers.

B. hydrocotylifolia.—This is really a charming old Begonia, and one which I have frequently seen grown as a window plant. It is a dwarf spreading species, having nearly round leaves, which are dark green, veined with blackish green; the scapes are erect, bearing large bright pink flowers on branching panicles, and these it continues to throw up in succession all the winter.

B. nitida.—This is another winter-blooming kind, which displays its chaste blooms to great advantage in the boudoir. The leaves are

small, shining dark green, with which the large trusses of snow-white flowers are contrasted beautifully.

B. Weltoniensis.—An admirable plant of dwarf compact habit; the foliage is small and dark green, whilst the flowers are large and bright rich pink in colour. It is a garden hybrid, and continues to bloom from January to May.

B. Veitchii.—Here we have a grand stemless species, introduced by Pearce, from Cuzco in Peru, where it was found growing at some 12,000 feet above the sea-level. The leaves are some 5 inches across, thick and fleshy in texture, and deep green in colour, except the margins, which are red. The flower scape is erect, bearing large vermilion red flowers, measuring 2 inches or more in diameter, which, in addition to their showy colour, are deliciously fragrant. It is a tuberous-rooted plant, said to be hardy.

VILLA GARDENER.

PTERIS CRETICA ALBO-LINEATA.

This is a beautiful and most useful greenhouse Fern. It is one of the best for cutting to mix with flowers in vases or bouquets, as it lasts longer in good condition when cut than most Ferns. It is also one of the best plants of moderate growth for pot culture, vases, or hanging baskets, if kept clear of insects, and regularly supplied with water. Few plants, too, are better suited for introducing extensively into conservatories, and as it grows well under the shade of large



Pteris cretica albo-lineata.

plants, it can be placed in situations where many plants would fail. Its colour, also, which is green and white, in about equal proportions, harmonizes well with that of most plants. It grows freely from spores, or it can be increased by means of division of the crowns. It will succeed in almost any description of soil, yet ordinary turfy loam, with the addition of one-sixth of crocks or cinders broken the size of horse Beans, mixed with a moderate quantity of clean sand, is the most suitable for it; as its fronds do not keep fresh so long when cut, if grown in peat. Like most other Ferns, it is liable to the attacks of thrips and brown scale. The latter must be removed with the sponge, the former kept under by means of fumigation.

Southgate.

T. BAINES.

Ficus Roxburghii.—An ornamental species of Fig tree from Nepal and the northern parts of the East Indies, growing about 18 or 20 feet high, and nearly as much in width. The stem is short and usually divided into three thick branches, with numerous and irregular subdivisions, which extend in all directions. The bark of the stem and large branches is of a brown colour and much wrinkled, while that of the young branches is green, and covered with a tawny pubescence which afterwards disappears. The leaves are alternate, oval-rounded in outline, entire or slightly toothed here and there, heart-shaped at the base and shortly acuminate at the apex, from

10 to 12 inches long, and from 8 to 10 inches in width, smooth and of a deep-green on the upper surface, relieved by the whitish colour of the larger veins, and pale green underneath, on stalks from 3 to 6 inches long. The fruit grows in clusters of from 6 to 20 from the prominences on the stem and the lower part of the large branches, and is of a depressed Pear-shaped form. Each Fig is about 1½ inch long and more than 2 inches across: Roxburgh says they are eaten by the Indians—probably more from necessity than relish. This species is also known under the names of *Artocarpus imperialis* and *Ficus imperialis*. Although it will survive the winter in a temperate-house, it should properly be grown in the stove. It has fruited for several years in the Botanic Garden at Orleans.

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Quamoclit vulgaris.—With respect to this pretty but tender annual climber, to which Mr. Teasdale refers in your last issue, your readers hardly need trouble their friends in India for seed, seeing that any seedsman will gladly furnish it, at the most trifling cost. There is a pretty white flowered variety equally attainable.—BETA.

Indian Crocuses (Pleionea).—These are both beautiful and effective when well grown. In a cool Orchid house at Manley Hall, near Manchester, I lately saw (October 29) 790 flowers of *P. lagenaria* and *P. maculata*, fully expanded at one time. One pan alone of *P. lagenaria* bore seventy-five fine flowers.—F. W. B.

Cocos Weddelliana.—The noble plant of this rare Palm, at Manley Hall is again bearing fruit, of which twenty-five are nearly mature, and another spadix also bears fruit, but not so far advanced. This specimen is the finest in England, if not in Europe, and has before borne good seeds, from which Mr. Petch has raised young plants.—F. W. B.

Ley's Variety of Adiantum excisum.—I notice (see p. 390), that my new Adiantum, viz., *A. excisum Leyii* (not Layii), is described as being suitable for a stove, which is a mistake, as it succeeds best in a perfectly cold greenhouse or conservatory. In fact, my plants are all in a cold frame, with no protection from frost except a mat thrown over the glass. Under stove culture it becomes drawn, and otherwise injured; but under cool treatment its bright green fronds have a truly fine appearance at this time of the year.—JOHN H. LEY.

THE FRUIT GARDEN.

FIGS.

I HAVE gathered our last dish of these in our small Fig house, from trees that have been in general bearing since the end of March. I find that generous treatment is what Figs require to ensure successful indoor cultivation, and if that is given them they will match, in regard to fruitfulness, the Figs which grew by the lake of Gennesareth, where the climate produced ripe Figs and Grapes for ten months of the year, as mentioned by Josephus. There are but few who dislike to eat green Figs, especially when they are of that luscious character bedewed with sweetness which is acquired in a warm temperature. I, however, keep the temperature of our Fig house very little above that of the Mushroom house; there is no necessity in either case for extreme temperatures, which are ruinous alike to Figs and Mushrooms; the latter under such circumstances become leathery; the Figs become ripened prematurely, and their season is of short duration. In many cases Fig houses, like Mushroom houses, would be better without fire-heat, but without it the fruit would not be ripe so early. The back walls, for instance, of some early vineries are often covered with Fig trees, which keep on ripening nice fruit all the summer and autumn months, whether the lights are only partly taken off the house, or the houses thrown completely open, a fact which proves that Figs do not require too high a temperature. Outdoor Figs with me this year have been more plentiful than last year, although this has been such a sunless and backward season, and the individual fruit has been considerably larger than that ripened indoors; but, on the other hand, it lacked the saccharine matter belonging to a well-ripened indoor Fig.

One frosty night or two, such as we have had of late, soon divests outdoor Fig trees of their leaves, whether the wood is ripe or not; when such is the case, the sooner the trees are nailed to the walls and protected against severe frost the better. In the case of indoor Figs, after they have borne fruit for eight or nine months in succession, and the wood is beginning to get naturally ripe, after firing has been discontinued, and when there is the greatest quantity of Figlets just peeping out, give the house one frosty night and the leaves will come down; this, like ripening the buds of Azaleas for early forcing, just brings them to the stage in which we want them, and there let them remain until required.

J. MILLER.

Worksop Manor.

PEAR ESPALIERS.

As the erection of galvanised wire trellises for fruit trees now seems to have become popular, it may be well at this season, when people are usually busy at such work, to say a few words by way of advice. And first of all we would guard intending planters on this system against making the trellises too low. The common type of old espalier trellis, 5 feet high or so, is not desirable. It does not permit of the fair development of a Pear tree; it necessitates more repression of the energies of the tree than is conducive to a perfectly fertile condition. No trellis should be made less than 7 feet high in the smallest gardens; in large ones 8 feet and 9 feet will be the best. Such trellises look much more agreeable than the low ones. Space above is always to spare, and the taller trellises are not much more expensive than the short ones. The common old way of making espalier trellises was with thick ugly wooden supports, and very strong bolt-like wire. There is at present a tendency to err in the opposite direction, and to make the trellises a little too flimsy. This is chiefly evident in the support or framework of the trellis, which should always be firm and unyielding. If the framework is sound, a galvanised wire as thick as strong twine will do perfectly well for the horizontal lines; and to make the framework strong nothing clumsy is required. The lengths of T iron of the desired height, well planted at the base, should not be too slender for their work. If the branches are trained in the upright form—and we strongly recommend that they should be so trained—it will be necessary to place rods of deal half an inch square from the bottom to the top of the trellises, at whatever distance it is determined to train the erect branches, say 10 inches or a foot. With reference to special contrivances for fastening the wires, making firm the uprights, &c., it is needless to say anything, as our manufacturers are now provided with the best materials in this way. The kinds of trees to be planted deserve much consideration; only first-rate kinds, which ripen well in the district, should be employed. Among the best kinds for use, in all but cold or unfavourable districts, are Louise Bonne of Jersey, Urbaniste, Marie Louise, Fondante d'Automne, Flemish Beauty, Beurré de Capiaumont, Beurré d'Amanlis, Knight's Monarch, Comte de Lamy, Baronne de Mello, Doyenné du Comice, Desiré Cornélis, Bloodgood, and Thompson's.

A protection against frost is easily contrived by straining three wires above the trellis thus Across these wires a small roof of some kind of cheap canvas can be easily stretched, and allowed to remain during six weeks of the most dangerous time in spring. The simplest way of forming this protection is to have a cross-piece of iron run through the T supports near the top, about 2½ feet long, and at right angles to the trellis. The two side wires could be run through eyes in the ends of the cross-piece; the central wire may be taken through the tops of the T iron supports themselves; or the top wire of the espalier may form the central line. In any case the two outer threads of wire should be strung about 6 inches lower than the central one. The canvas may be fixed to the wire by little hooks of lead or copper wire or with twine. At the Birmingham Horticultural Exhibition a manufacturer showed a trellis with an appendage somewhat like this, but it was a little too clumsily made.

THE VINE IN THE OPEN AIR.

(Continued from p. 382.)

MANURING.

THE Vine has been called a gross feeder, and its roots have been thrust into all kinds of borders, some even full of carrion. Our most successful cultivators, however, admit that such material is unfit for Vine culture. From one extreme we are apt to rush into another, which must be equally avoided, for it is obvious that a crop of Grapes must needs take a good deal out of Vine plants, and that the soil must be kept in good heart to keep up their powers of production. This is the more necessary, as the use of solid manure as a component part of the root run is deprecated. Rich rank compounds constitute one of the greatest drawbacks to the culture and ripening of out of door Grapes. Hence the borders can hardly be made too dry, fleet, or even poor. Maiden loam may be even too rich for out of door Grapes, and may need its strength lowered by a liberal infusion of brickbats, lime rubbish, and pure silica. The few bones that may be incorporated with the soil decompose so slowly as to yield up but little food to the roots. All this is favourable, but it likewise necessitates liberal feeding when the Vines are strained with hard work. During the first and second swelling of the fruit, stoning and colouring, the energies of the plant are tried to the utmost, and these are the times to apply stimulants. Hence the importance of feeding Vines chiefly with liquid food. It is at once available for the roots, and it neither injures the texture nor permanently enriches the earth. There is no better liquid food for Vines than house

sewage, a liquid compounded of all kinds of waste, enriched with soapsuds and dish washings. Lacking this liquid, watered down to the safety point, with three to one of water, good guano, in the proportion of an ounce to a gallon, also forms a good liquor for Vines. And a nourishing cordial can be made by placing a bushel of cow or sheep's dung into a twenty-gallon cask, incorporating them thoroughly and diluting them, as they are drawn for use, into fifty gallons of Vine drink. The chief point in this mode of feeding is to give enough to reach every root, and to give no more again until the roots are dry. With thorough drainage beneath, and a border full of roots, there is no fear of Vines in full growth having too much water. Of course, however, out-of-door Vines cannot utilize or convert so much moisture as those under glass, and some judgment is needed to nourish Vines wisely with liquids. Solid top dressings constitute one of the simplest and best modes of manuring Vines. They keep out the drought and furnish strength at the same time. A mixture of crushed bones sprinkled over the surface, or a thin coating of super-phosphate of lime or guano forms a useful top dressing; but the best of all is a coating of from 2 to 6 inches thick of half-rotted farm-yard manure or house excreta treated with dry earth and stored up dry for a year. The latter especially has a wonderful influence upon Vines, and is probably the richest and best of all Vine manures. So admirably is this adapted for Grapes, that if anyone would start a vineyard in connection with Moule's dry earth-closet system, he ought to make a fortune. The great point with out-of-door Grapes is to steer a middle course between excessive feeding and impoverishment, so that Vines may be furnished with strength sufficient to finish their crops without becoming too gross or strong.

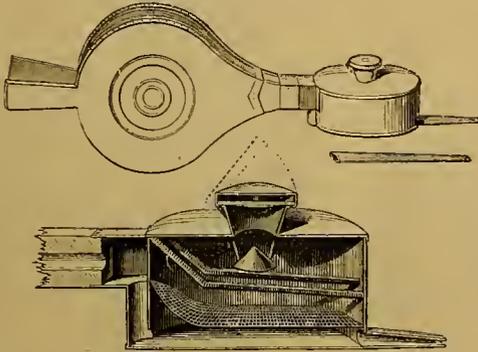
VINE PESTS.

These in the case of out of door Vines need cause little alarm. Indoors thrips, red spider, scale, green fly, and mealy bug sometimes appear; but it is seldom that any of these infest the Vine out of doors. With the exception of red spider, most of these pests are looked upon as signs of bad cultivation. However, as it is quite possible that a sudden check or an intensely hot summer may bring some of these pests on to out of door Vines, it may be as well to give a hint or two upon some of the easiest methods of getting rid of them. Powdered sulphur is the grand remedy for red spider, but "prevention is better than cure"; and the best preventive measure is a good syringing overhead in the afternoons of hot days. A moist atmosphere checks the development of this most troublesome pest, and a root medium, neither too wet nor too dry, ought to render its appearance impossible. Should mealy bug or brown scale get on the Vines, scrub them clean with strong soapsuds, and paint the stems over with a thick paint compounded of soft soap, sulphur, and nuxvomica at the rate of two ounces of the latter to one pound of sulphur. Mix the whole for use in boiling tobacco water, and finally add a small glass of turpentine. If green fly appears, dose it with tobacco liquor, and see that it is clean washed off afterwards; otherwise the flavour will hang about the Grapes. The best way of obviating pests of all kinds is to cultivate well and to frequently wash the heads of the Vines with clean water. It is doubtful, however, whether this will prove a safeguard against the worst of all Vine pests that has yet appeared, viz., the Phylloxera vastator. This insect preys chiefly on the roots, and gathers in such numbers around the collar of the plant, as to speedily destroy its life. It has ruined many vineyards on the continent, and has found its way into English hothouses. I have not yet met with it on out-of-door Grapes. But it may, nevertheless, speedily appear, its presence being shown in the form of suddenly arrested growth and drooping leaves. If the Vines show such symptoms, examine the collars and the surface of the ground, and if the fly is found, the shortest and best remedial measure is to take up the Vine and the earth in which it grows, and burn both at once. The next best course is to collect the larvæ as they appear on the leaves, and to burn leaves and larvæ together. But instant destruction of the whole plant is the likeliest means of stamping out, and thus preventing the spread of this terribly destructive pest.

DISEASES OF THE VINE.

No plant is freer from disease than the Vine; and, singularly enough, certain maladies that affect its fruit indoors hardly ever touch it outside. This is especially the case as regards rust, a sort of corrosion which penetrates the skin, and the shanking and shrivelling of berries and bunches. Even the varieties most given to shank in vineries, such as the Grizzly Frontignan, remain perfect in bunch and berry on the open wall. There are only two diseases known among out of door Grapes, and one of these is but little known, viz., root disease or fungus, and mildew on the fruit, foliage, and wood. Of these the first is very rare. It is well, however, to avoid anything in the form of tree leaves, leaf-mould, or rotten wood in the making of the Vine border, and to see that none of the soil used has come from the neighbourhood of Pine or other trees.

Mildew is a terrible disease that sweeps over Vines with destructive force. Its origin is often climatical. Sudden alternations of heat and cold, from wet to dry, and those peculiar atmospheric conditions called, for want of a better name, "blight," breed mildew; the latter may be fought sometimes with a volume of smoke. If a heap of green boughs or Furze, or even damp grass or leaves, could be set fire to near to the Vines, when the blight is approaching, the smoke would either prevent the germs of the fungus from falling, drive them away, or neutralize their effects. The chief causes of mildew may, however, often be found in unskillful treatment—over-cropping, under-feeding, over-crowding. Mildew takes advantage of a weak plant, while a strong one often defies it. Not always, however, for mildew is one of the most powerful as well as subtle of all diseases. The only cure yet discovered for it is sulphur. Dash this dry or sprinkle it wet on the fungus, and persevere in doing so until it dies. Never mind the Vine leaves and fruit being smothered in sulphur; better powdered than than whitened with mildew. If the latter is killed, the former can soon be washed off. The best chance of vanquishing mildew consists in attacking it early. In fact, when discernible, it is almost too late. Sublimated sulphur can be blown on the Vines through a sulphurator, with bellows attached. About three applications in a season will insure freedom from mildew. Give one as soon as the bunches show themselves; a second after the first swelling has taken place, and a third just before the Grapes begin to colour. It is safest to apply it in the evening, when the leaves and fruit are wet with dew. If used during sunshine, the sulphur fumes are apt to pierce the thin skin of the fruit. Sulphur vivum, at the rate of 2 oz. to a gallon of boiling water, and applied with a showerer, is a preventive of, and cure for,



Sulphurator, with explanatory Vertical Section.

mildew. Should this disease have appeared one season it is a good practice to paint the Vines with sulphur during winter, with the view of destroying the spores.

THINNING THE FRUIT.

This is a point of great importance as regards the culture of out-of-door Grapes. No plant has suffered more than the Vine has done from overcropping. I have even known as many as six bunches to be left on a single shoot. Under such heavy crops, out-of-door Vines have often drooped and withered. Similar recklessness would ruin every Vine under glass throughout the kingdom in less than a year. Small fruited Vines, such as the Claret, Burgundy, or White Cluster, may carry two or three bunches on each spur; but with all the larger Grapes, one only should be the rule and two the exception. That is, when the bunches are small or the wood long-jointed, two bunches may be left on a spur. Then, as to the number of shoots to an eye, one only for fruit bearing among the larger sorts, and two for the very smallest. A free but discriminate thinning of the bunches is one of the first conditions of success. As to the time of thinning, there is no occasion to be precipitate. Our capricious springs are rather apt to take the matter into their own cold hands, and to thin the bunches to excess. It is, therefore, best not to thin the bunches until the berries are fairly formed. Then, first of all, of course, any imperfectly set, small, badly formed bunches should be cut off, and the best, as well as the largest left. Grapes grown for wine only need not have the berries thinned, but all the larger varieties ought to be thinned. About three weeks from the time of setting is the best season for thinning. If left till they get squeezed together, the work is difficult, and the berries left get bruised and injured. As to the extent to which thinning should be carried, one taken and another left is a safe rule for small Grapes, such as Frontignans and Muscadines; and one left for two cut off for Hamburgs, Sweetwaters, &c., provided always that the bunches have set regularly. Sometimes they do not. Before thinning give the bunch a sudden shake, and most of the imperfect berries will drop. Always leave the finest

berries and the outside ones—a practice which adds considerably to the size of the bunch. The proper thinning of out-of-door Grapes is all that is needed in many localities to bring their quality up to that of fruit grown in cool vineries. CRASSELAS.

(To be continued.)

MOVEABLE FRUIT TREE TRUCKS.

AN interesting article in THE GARDEN of the 12th ult., in describing the seat of Sir William Armstrong in Northumberland, mentions a fruit house in which the trees in pots are placed on a moveable platform, the invention, it is stated, of Sir William Armstrong. May I be allowed to correct that little error? as the system was invented by me, and it was after reading my pamphlet on the subject that Sir William communicated with me. The result of the correspondence was that he ordered the truck now at Cragside of the firm in this neighbourhood who then made my trucks. It was constructed very large and of great weight by the express direction of Sir William, that he might show how easily it could be moved by one of his hydraulic presses. The trucks for this "new method of growing fruit" are now made of an elegant design in iron fret-work, with revolving pans into which to plunge the pots, and are so light that a strong boy can with the greatest ease move them in and out of the house on a level, not a sloping, railway as at Cragside. The construction of these trucks is solely in the hands of Messrs. Barnard, Bishop, and Barnards of Norwich. I may add that it was found advisable, as the system became more developed, to build vineries expressly for carrying it out, as in them not only the Peaches, &c., but the Grapes also can be far better grown than in the orchard house properly so called. JOHN FOUNTAINE.

Southacre Rectory, Brandon.

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Gros Guillaume Grape.—This is an excellent winter Grape. Some fine bunches of it may now be seen at Drumlanrig, the heaviest of which cannot weigh less than 8 lbs. It often keeps well till the middle of March; indeed, it is only after hanging some time after being ripe that it acquires its best condition. It is generally known in the south as Barbarossa.

Vine Borders.—I have a vinery which I am going to force at Christmas. The border, which is entirely inside, has been well manured each year. The ground is now hard. Should it be forked? and what is the best manure with which to mulch?—J. R. W., *La Favorita, Guernsey*. [Prune your Vines now. Carefully fork up your border so as not to disturb the roots. Give a good soaking with water, and mulch with farmyard manure. Begin forcing with say a temperature of 50°, gradually increasing the heat as the season advances].

FLORA ANTIQUA.

THE FLOWERS AND GARDENS OF THE ANCIENTS.

GARDENS and the love of flowers date from immemorial antiquity. The history of man, though it concludes, prospectively, in a City, describes his first abode as a garden and a place of fruit-trees. It was in that earliest and best of gardens that he spent his happiest hours, and that he acquired his fundamental ideas of order and beauty; and though in its original shape Eden was too soon lost, the grand old theory that lay within held in it the seed of immortality. The first garden disappeared, but a thousand gardens were born of its lessons. The annals of human enjoyment are inseparable from those of floriculture—not necessarily as we think of it to-day, but as the art which in one mode or another, according to the skill and taste of the age, utilizes plants and flowers after the manner best calculated to give pleasure. The history of gardens and gardening is, in a word, essentially like that of music and language: the form may change, but the spirit is permanent; and like these again, and like sculpture and architecture, could we suppose it possible for a temporary extinction to overtake it, in a little while it would spontaneously come again. Floriculture, in brief, like the fine arts, if it be not the first and finest of them all, is one of the inalienable instincts of the human mind. Hence, too, in its cultivation and pursuit consists one of the most excellent of occupations, so that in all ages we find the amiable and industrious of both sexes devoting their leisure and their love to their gardens; while literature, and all the most elegant associations of humanity, teem from the earliest times of which we have knowledge, with references to their beauty, to the Lily and the Rose, and to the green and aspiring tree. We should err, if we thought of gardens and gardening only as nineteenth century triumphs. Orchids and Camellias, the

Dahlia and the Calceolaria, are things, no doubt, emphatically our own. So are greenhouses, and conservatories, and the arboretum, but they are only additions, beautiful and original every one of them, without a question, but still only additions. The garden, *per se*, is older than anything it contains: the profoundest archæologist, let him go back as far as he may, can never show us anything more ancient.

Seeing then that the ideas of gardens and gardening, and the love of flowers, are bound up with the history of man, and identified with so much that is noble and progressive in him; seeing too that our own nineteenth century care for these things, if a possession, is also an inheritance, it becomes interesting to enquire after what fashion were the foundations laid; after what manner did floriculture grow and strengthen; what was the complexion of the gardens of antiquity; what plants did the ancients most esteem; which of the flowers about them were dear to their poets and essayists; were they the ancestors of our own, or of other and now forgotten kinds? What, again, did they turn to when they desired some beautiful object for simile or metaphor; what trees did they love for their arbours and shady walks? We may find perhaps in the replies some capital hints as to restorations of the forgotten, the very beauty of which shall make them seem new. If it be delightful to trace the first steps of a man of genius, it cannot be dull and fruitless to pursue inquiries such as those indicated. Perhaps we may discover as we go along that though "the sun of Homer shines upon us still," the sweetest link of the present with the past, next to that of the affections, consists in the presence of the trees and flowers; that these, above all other things external to us, best "make former times shake hands with latter," and are embedded most deeply in all that is best in story and fable.

It may be well, however, to pause for a moment on the problem—*Why* was a garden the first habitation of man? We take the circumstance as intended to supply a straightforward and emphatic lesson as to the best place for the beginning of a thoroughly useful education. What is good for the race is good for the individual, and happy is the man who gathers his first experiences in thought and fancy from trees and flowers. No unprofitable inquiry would it be to ask how much of the early impulse to amiable and generous pursuits on the part of those who have left their "foot-prints on the sands of time," was developed under the sweet and silent influences of the paternal garden. We often read of the happy influence of womanly mothers—almost as capital a record might be discovered, perhaps, in connection with the influence of green nature, and most especially that part of it which floriculture would call her own. Let any man who knows how to look at himself in the light of thought, just question his ideas of what is graceful and true as to their birthplace, and in 99 cases out of 100 it will be found in connection with early cognizance of trees and plants; many a one remembering the fragrant thyrsi of the first-known Lilacs, the blossom that lay on the Apple trees like soft pink snow, the Laburnums that let fall their innumerable golden tresses, the rapture of the Daffodils that gave way only to that of the Strawberries, and the autumns that were a time not so much of decay as of Michaelmas Daisies. Spectacles such as these not only photograph themselves on the mind of a child; they become centres of mental life; they tell, every one of them, in due course; never, perhaps, exactly after the same manner, but with every man according to his intellectual aptitudes and temperament. The special result does not signify, for the advantage is the same all round; it is enough that the garden shows itself to be like Isis, capable of supplying aliment to all comers. Best of all, when the garden is in youth not merely a spring of ideas, but a place given to "dress" and to "keep." Let a lad have employment enough in the garden for his heart and his holidays, and he will never be tiresome or mischievous. It is for want of something to do that lads run riot in wrong directions. Directly that he realises a sense of personal property in it, feels the pride of responsibility, and becomes conscious of winning honours, that moment is the nail hit on the head, and a love of order generated, and of industry, that will remain with him for life, and grow daily.

What the boy admires,
The youth endeavours, and the man acquires.

So that that ancient and excellent idea of starting life in a garden has never lost its primitive force and efficacy, nor was it ever in better season than the present, when the atmosphere seems to ring with "Education." Depend upon it, the fundamental and broadest principle of education is "Learn to observe," and next best to that is Learn to employ the hands intelligently. We cannot, of course, make schoolroom and garden convertible terms for every boy and girl in the community; the argument is simply that where the opportunity for enforcing them can be secured, these two formulas are the best and soundest that education can adopt, and that they can nowhere be so well applied as in connection with simple floriculture. Charity and benevolence never hit upon a kindlier mode of educational usefulness than the encouraging of floriculture among the unlettered and the poor. Though it get no further than half-a-dozen flower-pots in a cottage window, a Geranium, a Hydrangea, and a few Hyacinths in their season, the good silently effected is immense. Perhaps if the Home missionaries in their visits to the poor were to encourage it a little further, they might open up avenues of approach to people's better nature that they have never before known of. A pot of Primroses or of Rhodanthe may be made to speak as powerfully as a text; see how the eyes of the poor invalid glisten when you show it them and call it their own!

If these be not matters pertaining to the "Flora Antiqua," at all events they spring out of it, and in considering them, we may yet be nearer than we suppose; since the best part of the flora of the ancients belongs as thoroughly to the moderns, and it is not improbable that the identical plants we cherish have many of them come by direct descent from those cultivated primævally. This of course can only be true of flowers indigenous to south-western Asia, and to the countries which border on the Mediterranean; it is a matter too quite incapable of proof, but that there is a reasonable likelihood of it few will deny. No herald can deal with their pedigrees and genealogy, but could the descent of some of our old-fashioned and typical flowers be traced, the tombs of their ancestors would be found, as likely as not, in Greece or Italy; the seeds, the offsets, cuttings, slips, and so forth, having been passed on with the progress of civilisation and social refinement, till the last descendants have a pleasant resting-place in old England. In Europe Wheat followed in the wake of the Romans, as the Vine did in that of the Greeks, and as cotton did in that of the Arabs. Everyone knows the beautiful story of the "Finderne Flowers," the traditions of the Crusaders, and that the Myrtle was first brought to England by Sir Walter Raleigh and Sir Francis Carew. The Egyptian frescoes show that vegetable forms and outlines have not changed; in a thousand ways we discover what is sufficient to justify our regarding the Flora Antiqua as being like floriculture itself, an integral part of our family estates; not a thing obsolete and for the study of scholars, but a living and bright reality, like a waterfall, ever the same, though the particles themselves pass away while we admire.

LEO.

(To be continued.)

THE ARBORETUM.

YOUNG'S NEW GOLDEN CHINESE JUNIPER.

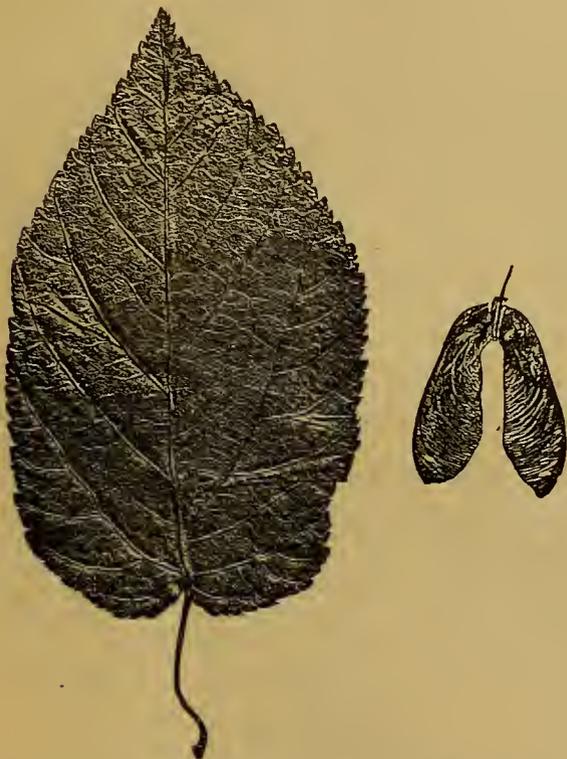
WE have paid a visit during the week to the Milford Nurseries, purposely to see this plant at home, and have great pleasure in reporting it to be constant and attractive in every stage, though the present is not the season for seeing it at its best. The Chinese Juniper is well known as one of the hardiest of Conifers; the novelty named above is the exact counterpart of its parent, in all but its colour, and that colour is equal in richness of hue to that of any golden Conifer hitherto known. The variegation is thoroughly constant. The plants have a close pyramidal habit, and have the two kinds of foliage which is characteristic of the parent, while the colour on the more prominent portions of the plants is as bright as the tint of a Golden Holly. Taking its hardness and various other merits into account, we have no hesitation in pronouncing it to be one of the most valuable variegated subjects ever sent out.

HARDY TREES AND SHRUBS.

BY GEORGE GORDON, A.L.S.

THE TARTARIAN MAPLE (*ACER TATARICUM*).

THIS forms a tree from 20 to 30 feet high, with numerous branches and branchlets disposed in a compact head, sometimes 20 feet through, and densely covered with leaves of a lively green. It is a native of Tartary and the south of European Russia, particularly along the Volga and its tributary streams. The Tartarian Maple grows freely in any good soil, but prefers one that is rather moist. It was first introduced in 1759. The leaves are heart-shaped and somewhat pointed, but sometimes those on young plants and on the stronger shoots are visibly three lobed; they are of a bright green above, irregularly serrated on the edges, and distinguished by a peculiar veiny appearance on the upper side, particularly when young, but when matured they are smooth on both surfaces, and just before they fall are of a reddish-yellow or brown colour. The flowers are of a pale yellowish green, sometimes tinged with red, and are produced in erect, compound, crowded racemes in May. The fruit or keys when young are covered with a short



Leaf and Key of the Tartarian Maple.

down and are slightly tinged with red, but when ripe in August quite smooth and of a brown colour, with small thinish carpels and large parallel wings but slightly separated. This is a very desirable Maple for planting in the shrubberies, on account of its coming into leaf so very early in the spring. The length of a full-sized leaf is $5\frac{1}{2}$ inches, including the footstalk, which is about $1\frac{1}{2}$ inch long, and the breadth $2\frac{1}{2}$ inches.

The Weeping Larch.—This is one of the most elegant of all our hardy deciduous trees, and I presume that it is very rare, at least as a large tree, as I have never yet seen or heard of any approaching the size of one growing in these gardens, which densely covers a walk 10 feet wide for a distance of 130 feet, its side branches spreading full 15 feet on each side down to the ground. It is of so extremely recumbent a form of growth, that a very powerful support to the branches is necessary to allow of sufficient height for walking underneath. Some few years since, a double row of polished Oak posts, 8 feet high, was erected under it on each side of the walks with iron posts just under the stem and main branches, and cross bearers at intervals to support the lateral branches which have

covered the whole structure so effectually that the sun's rays cannot penetrate it. The branches grow perfectly flat on the trellis, requiring no training, and there is not one on the whole tree rising to a greater height than 15 feet. I have seen *Larix pendula* mentioned in nursery catalogues as growing from 30 to 50 feet high. Possibly this may be a distinct variety.—JAMES GROOM, *Gardener to Earl Stradbroke, Henham Hall, Wangford, Suffolk.*

New Fibrous Material.—J. Schreiber & Co., of San Francisco, have recently taken out a patent for the working of the inner bark of Port Orford Cedar (*Cupressus Lawsoniana*) into material suitable for upholsterers and paper makers. The bark has a long, tough fibre, and is quite soft and elastic when beaten up or otherwise prepared. Pulu is going out of use as a cheap bedding material. If Cedar bark is cleaner and better it may come into extensive use. There is an abundance of this bark at Coos Bay, and wherever in that region there are saw mills in operation. A clean, soft, elastic, and cheap bedding material has long been wanted. It is possible that this want is to be met in the new preparation of Cedar bark.

Rhododendron Mania.—I have just read "Salmoniceps'" article on this subject, and with which I quite agree. I have a bed of Rhododendrons in front of my house which I have for some time wished to remove. They are all very well in June, while in blossom, but at other times they are not satisfactory. What would you recommend to substitute in their place? It should be something that would not grow higher than 4 or 5 feet, and evergreen—if all of one sort, or would you advise a mixed bed? The situation is rather exposed. Do you think *Dracæna indivisa* would thrive in the open air here in a sheltered spot? Will it stand severe frost, or should it have some protection in winter?—T. WILSON, *West Meath.* [It will probably be best to place a few favourite evergreens among the Rhododendrons; also some Lilies, and such plants as *Sparaxis pulcherrima* and *Arundo conspicua*, which will form a charming variety in summer. You are probably a little too far north for the *Dracæna* to do well, though, as it succeeds in Kilkenny, it is worth a trial.]

Camphor-wood.—The Camphor-wood boxes brought from China and the east are well known for their strong preservative odour, and are found useful in keeping away moths from woollens and furs. The China and Japan Camphor tree belongs to the Laurel family, but that of Sumatra and Borneo is the *Dryobalanops Camphora*. Even the leaves and fruit smell of camphor. In Sumatra this tree is abundantly met with on the west coast, chiefly in the extensive bush, but seldom in places more than 1,000 feet above the level of the sea. The tree is straight, extraordinarily tall, and has a gigantic crown, which often over-tops the other woody giants by 100 feet or so. The stem is sometimes 20 feet thick. The Barus camphor of this island is the most esteemed of any, and it is for this drug, obtained in but small quantities—seldom more than half a pound to a tree—that it is ruthlessly destroyed. The tree, when felled, is divided into small pieces, and these are afterwards split; upon which the camphor, which is found in hollows or crevices in the body of the tree, and above all, in knots or swellings of branches from the trunks, becomes visible in the form of granules or grains. An essential oil also exudes from the tree in cutting, which is sometimes collected, but is scarcely remunerative. On the west coast of Formosa there are forests of Camphor-wood, and a great deal of crude camphor is shipped thence to Amoy and other Chinese ports. Large quantities of the wood are sawn into planks. Tables and cabinets are then made of it, and it is also turned into platters and washing basins. Only a small portion of the vast camphor forest of Formosa has been reclaimed from its wild inhabitants, and this consists of fine tall trees, the growth of ages. When a tree is felled, the finest part of the wood is sawn into planks, the rest chopped small and boiled down for the camphor.

NOTES AND QUESTIONS ON TREES AND SHRUBS.

Euonymus radicans variegatus.—This plant, so much admired as an edging-plant, is a perfect gem for covering low walls with a sheet of brilliant silvery vegetation. I saw some beautiful examples of it the other day, treated thus in Mr. Southall's garden at Worcester.—V. E. R.

Mistletoe on the Horse Chestnut.—It may be worth recording that there is a Horse Chestnut tree in the Park at Madresfield Court with a great many plants of Mistletoe on it, many of them evidently old, but none large or bushy. The tree seems much contorted, perhaps from the presence of the Mistletoe.—W.

The Dwarf Rock Holly.—Permit me to recommend this miniature and very peculiar looking plant (*Ilex crenata*) and its variegated variety to lovers of dwarf rock shrubs. It is so very neat and dwarf in habit, and so very unlike a Holly!—IRIS.

Hardy Heaths.—Those whose plants of hardy Heaths have become a little lanky, will do them much good by cutting or clipping them pretty sharply in the spring. This particularly applies to the common Ling and its varieties. They look much better when induced to form a compact fresh growth, and their appearance at flowering time is usually much superior to that of plants not so treated.

Spontaneous Combustion of Wood.—A paper in the *Comptes Rendus* states that an oak beam was found to be on fire during one of the hot days in the summer. It was directly exposed in an open yard to the concentrated heat of the sun's rays. The combustion, though proceeding slowly, was quite distinct, but was not attended with flame; the smoke, however, had a peculiar appearance, and, on blowing the wood, it burst into flame. It is asserted that the fire was entirely due to the heat of the sun.

THE FLOWER GARDEN.

GEOMETRICAL GARDENS UNGEOMETRICALLY PLANTED.

It may, in some cases, in close proximity to dwellings, and with a view to establish a certain harmony of linear design between the building and the garden, be advisable to lay out a certain portion of the garden on the principle of regular geometrical forms, well and strongly marked out by broad turf borders, or trim Box edgings. Some, however, are beginning to hold that a higher beauty results from the contrast of a more natural style of garden with the unchanging lines of the building. But, assuming that we prefer a geometrical style, there is no occasion whatever to fill the beds entirely with masses of flowers arranged in a geometrical manner. A successful example of not doing so, I met with a short time since, when on my way to visit the noble Rose plantations of the Messrs. Paul, at Cheshunt. The example was a small one, but it struck me as a very pretty one, and illustrated rather pleasingly the principle I am now advocating. It was the flower garden of a diminutive villa, or rather cottage. The compartments of this little flower garden were simple geometric figures, bordered by a thick edging of Box; and the beds, thus framed in, were filled with a profusion of flowers of nearly all the hardy summer-blooming kinds, left entirely to their natural growth—some high, some low, some stout and bushy, some slender and delicate. There were perennials, annuals, and biennials mingled; and there were slim branching Larkspurs, stout pyramidal Canterbury Bells, tufts of the brilliant and yet chaste minor Convolvulus, and masses of delicate white or pink Clarkias, looking like small Gothic crosses changed into flowers. Then, there were some noble spikes of *Lobelia cardinalis*, with their dazzling carmine; some good varieties of *Mimulus*: and many broad patches of golden *Eschscholzia*s. There was scarcely a single representative of the ordinary "bedding plant" category; and the natural and accidental mixture of rich colour of these hardy herbaceous plants was quite as striking as masses of *Pelargonium*s could possibly have been, and at the same time a great deal more interesting. In this little flower garden the trimness of the formal beds, with their Box edgings, was partially and agreeably disguised by the various heights of the plants, which in some places concealed the outline of the squares and triangles, while in others the direction of their lines was left just sufficiently visible to suggest the form of the bed, instead of making its outline hard and prominent, as in the case of "ribbon borderings" of different colours, one within another, in regular lines, which give to a flower bed the appearance rather of a gaudy embroidered pincushion than of a graceful enclosure, within which favourite and beautiful plants of many kinds are distributed, as by chance, mingling their colours, as on some spot naturally rich in flowers of many hues.

The system just described, from a very humble and minute example, is illustrated in the annexed engraving upon a large, and indeed, magnificent scale. The gardens of the Chateau of Fontainebleau afford an example of geometrical gardening, as it is called, in which the regular forms of the compartments are modified in their formalism by the admission of the "free growth" principle to the select vegetation with which they are duly filled. The difference between such a system as this and the "embroidered pincushion" system, involved in the fashionable "bedding-out" principle, is immense. Both are based upon a series of compartments, of geometrical form, well or ill designed, as the case may be; but while in the first case this hard and formal basis is modified and softened by gracefully irregular planting, in which pleasing contrasts, both in form and in colour, are judiciously sought; in the second, the formalism is exaggerated, and the set lines hardened, by the "ribboning" and monotonous massings of the "bedding-out" principle. The good results attained by contrasts in the form, flower-colour, and size of the plants in the system illustrated by the magnificent garden of Fontainebleau, will be at once perceived on reference to our excellent illustration, the work of an accomplished artist. It will also be seen at once that the large scale of the site admits of the introduction of flowering shrubs in each compartment, as well

as herbaceous plants, by means of which, great variety of outline and general character is obtained. Indeed, without the increased height and superior massiveness obtained by the shrub feature, the general effect of so large a garden would be flat and uninteresting to an insupportable degree.

While so far praising the horticultural treatment of the garden ground immediately adjoining the fine old palace, one cannot pass over its glaring defects. First and foremost among obtrusive faults of design is the hard line of cropped Limes, which cuts the fine architecture of the palace in two, as seen from the gardens—a topiariau mistake already alluded to in a previous number of *THE GARDEN*. This defect is so disagreeable, and so evidently an ugly blot on the whole scene, that one wonders how its rectification has been so long delayed; for mere stupid veneration for the offensive green wall, stilted on wooden legs, or at all events on stumps, cannot surely account for the preservation of such an eyesore. If large, clear gaps were cut in this long green shade, as disfiguring to the palace as a green shade over the eyes is to a human face, and the remaining groups were allowed to assume a natural growth, the effect would be immediately improved. The partial interruption of the hard lines of stone, by groups of foliage, would be very pleasing, and as the spectator moved, portions of the building would be seen through another opening which had previously been concealed by an intercepting group of Limes, thus creating constant changes of aspect, which are always of the greatest value, where interesting pictorial effects are sought by the planner of the scene. In the flower beds themselves increased effect has been sought by means of pyramidal masses of foliage of considerable height—a feature of the highest value in garden devices of this kind. But then the feature should have been sought in the Irish Yew, the pyramidal Thorn, the Cypress, or almost any of the tall-growing Thujas, instead of the poor Yews shaven into the shape of green spikes, so accurately represented in our illustration. This principle, where height is required, is best exemplified in the formal gardens of the great Italian villas, where the beautiful Cypress forms the pyramids of green which the variation of the garden lines imperatively requires. It is greatly to the credit of the Italian gardeners that, while cropping their Limes and even their evergreen Oaks, they never allowed profane hands to apply the shears to the glorious form of the aspiring Cypress, nor ever attempted to crop the crest of the Stone Pine into the spheroidal form of a great green mop, with the tall and ever graceful, though bare, trunk, for a handle. Certain forms of vegetable beauty seem to have overawed the croppers and topiarists, and thus the noble Cypress and the elegant Stone Pine have escaped these barbers of the gardens.

NOEL HUMPHREYS.

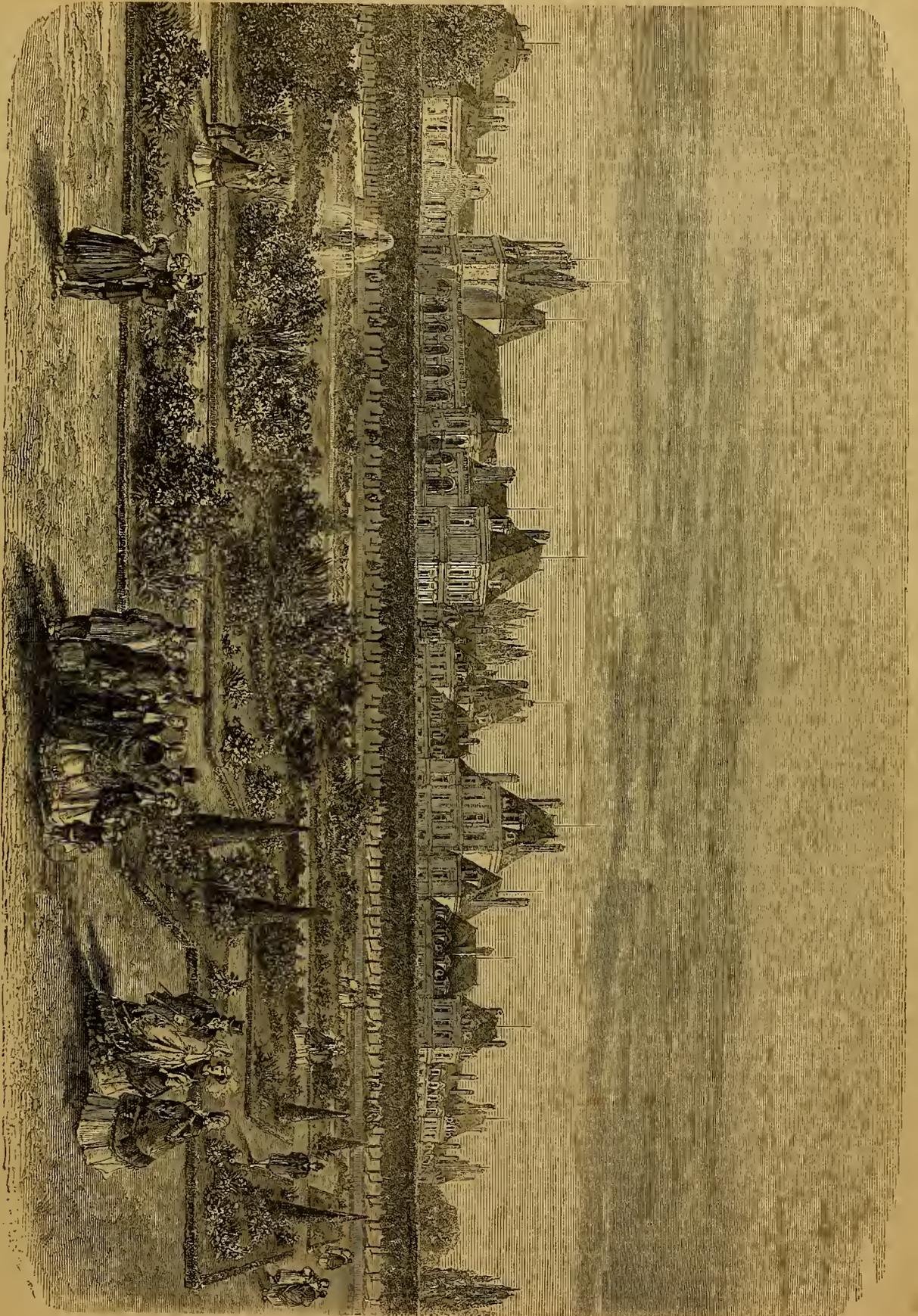
BEDDING OUT.

A DEFENCE AND A REPLY.

(Concluded from p. 334.)

You will see, then, I am an advocate for those who wish to carry out the system of bedding-out to the greatest advantage, to erect suitable houses, and to take as much pains in the winter management of them as they would with plants which they grow to ornament their conservatories and stoves; and where this cannot be done, it is far better to reduce the number of plants, and to see that those which are put out are not only good sorts but good plants, rather than to plant out too many.

Of all the remedies proposed for the improvement of our gardens, this, expressed in the passage in italics, is the most singular. With little or no interest in the larger and richer class of gardens, and character and interest being rapidly driven out of the smaller ones, in consequence of their owners aping the fashions of the big gardens, we read the maddening advice "erect suitable houses," &c. When one reflects on the miserable emptiness of our outdoor gardens, notwithstanding the large sums of money spent on many of them, the wisdom of this advice is fully seen. Advise a man stricken with bronchitis to winter in the fogs of Rotherhithe; invite a whale struggling amid the shallows to come on dry land; imagine any folly you like offered under the name of good advice, and you will find nothing more pernicious than



A GEOMETRICAL GARDEN UNGEOMETRICALLY PLANTED.

this. Happily few can take advantage of it, even if willing enough to do so. A man must be rich to build more houses "for bedding plants." I did not think that even an advocate of the bedding system would advise that as much attention be given to the bedding plants in winter as to the plants for the stove or conservatory. What! is there not enough of adoration, in the shape of expensive and ceaseless work, now offered to this ugly idol, without condemning the unhappy gardener to take as much pains with the floral pigments which are to adorn the idol's hide as with the plants for the conservatory? I am glad to say that even among the many gardeners I have met who still cling to bedding, chiefly because they do not see their way how to effectually supplant it, there is an almost universal opinion that it has been overdone, and that to subdue it in various ways, and not to increase it, must be the aim of every wise gardener.

Now comes an important point, and that is the general management of the planting itself. First of all, let everyone have a plan of his garden on paper. Let every gardener note down from time to time during each season the habit, and growth, and colour of each of the different kinds of plants he grows, and then make up his mind as early as he can how he will plant his garden next year, so as to put in a sufficient stock of each kind required for the different beds, and avoid having to spoil a particular combination of colouring by falling short of some plants while he is overstocked with others. Next I would warn gardeners against too great a use of primary colours, such as scarlets and yellows. Let them try and get as great a variety in different shades of colour as they can. If, for instance, in a long bank, the bank be divided into a number of beds, instead of repeating the same kind of scarlet Geranium, or pink Geranium, as the case may be, it is far better to use different kinds, so as to avoid too much repetition and to be able to compare one kind of scarlet with another, or one kind of pink or crimson with another. Use also a good deal of soft colours and neutral tints, such as Ageratum, Purple King Verbena, Geraniums of the Amy Hogg, Violet Hill, and Lady Kirkland stamp. Avoid the use of large beds as much as possible, especially large beds of primary colours; take care not to plant the centre beds of your garden with such things as Tom Thumb Geranium or yellow Calceolaria, so as to attract the eye from the outer beds; be careful about the use of white, though perhaps there is less need to warn against this, as there are so few white flowers, but it is as well not to overdo white variegation. A garden should be much like a good carpet in a room—rich and harmonious, pleasant for the eye to dwell on, not going into violent contrasts or glaring colours, or having too conspicuous a pattern; and the effect ought to be produced as much as possible by means of flowering plants, and not mere variegated or ornamental-foliaged plants, though these plants ought to be used in order to give diversity and difference of form; and some of the variegated plants, as tricolored and bicolor Geraniums, are especially useful in separating one primary colour from another.

A garden should be like a carpet! Shades of Bacon, and Milton, and Shakespeare, and Cowper, and of all who ever loved or sang of a garden, forgive me for reprinting these words. The majesty of our noble deciduous trees, and the magical change from leafless boughs to freshest canopies of the verdure of spring; their glories of colour before the equally beautiful fall; the deathless grace of the noble evergreen trees we are now gathering from many climes; the loveliness of the early children of the year coming in dense crowds; the new flowers that in a true garden open fresh every day, except when the earth takes a short rest in winter; the glorious fruits that crown the autumn; the varied and beautiful forms in the magnificent garden flora now within our reach; the innumerable divine odours which the plants distil by day or by night; the CHANGE which in every bud and bough works with the seconds, giving us new pictures every succeeding day; the LIFE in everything—the life which gives gardening a hold on the mind of man which art can never possess—all these and much more that might be added or that cannot be expressed in words, should resemble a "carpet in a room!" Let us try and forget the ignoble, false, and mischievous comparison—alike insulting to nature and to man's intelligence.

A garden, we ought to remember, ought not only to be beautiful but it ought to be interesting, and mixed beds of Verbenas, and trial beds, where one kind of plant can be compared with another, will always add to the interest of a garden, and I know hardly any bed so beautiful of itself as a well-grown bed of mixed Verbenas.

I have said nothing as yet about the plan of the flower garden or

beds themselves, but I would add a garden for bedded-out plants ought to be rather more formal and of the geometrical order for the proper harmony of colouring in bedding. The beds, also, should form a good pattern of themselves, not be merely so many forms cut out of grass or laid out on gravel, but should be separated from each other by a nearly uniform breadth of walk, and none of the beds ought to be too big for the others, so as to dwarf the rest by comparison. Each bed should also be of good shape of itself, avoiding points and angles, and unnecessary twists and curves, and avoiding all unnecessary attempts at elaborate design, so as to make the flowers the secondary point. A flower garden ought essentially to be a flower garden; not so much Box and gravel, not so many yards of tile and coloured paths with statues, and vases, and grotesque figures, &c., but flowering plants should be the predominant feature.

It is pleasant to notice Mr. Peach's partiality for that pretty sight, an ungeometrical plantation of Verbenas. I am also glad not to have to group him among the brick-dust or pounded-slate gardeners, whose ranks seem so very thin of late. He is too true a gardener to ally himself with these, and is in fact many degrees before them. There is in fact much reason for hope in his case, and I have not the least doubt that half a dozen years hence we shall find him as anxious to develop the beauty of the noble hardy flora now within our reach as he is now to tell us about the patterns and shapes of beds and walks in the bedding garden. Let us hope that till the better time arrives he will thoroughly enjoy his "bedding" garden. We have indeed no reason to object to him or anybody else satisfying his own taste in his own garden. But when Mr. Peach, in defending bedding out, makes public statements unsupported by facts, concerning other and more important branches of gardening, and makes statements moreover calculated to retard the progress of the true art of gardening, he gives me the right to answer him.

With reference to the statement about the necessity of a garden being beautiful as well as interesting, the truth is, a garden cannot be beautiful unless it is interesting.

Time warns me to conclude. I would only add, my object in making these remarks is to stand up in defence of a system which has done so much for horticulture, and to ask gardeners to help to defend it by being still more careful about the quality of plants they bed-out, and the manner in which they are grouped. I do not wish to interfere with those who prefer herbaceous borders and an attempt to grow plants in what they call a more natural rather than a formal manner; but as all dressed ground round houses must necessarily be more or less formal, as the mere fact of moving a lawn and forming walks and beds prevents the adoption of flowers *au naturel*, it seems to me rather hard to condemn the taste of those who prefer to see their gardens planted with Geraniums, Verbenas, Ageratums, Calceolarias, Lobelias, and other plants of a like nature, which have proved effective in combination, and more durable and more manageable than the old herbaceous borders.

We have before discussed the question of flowers arranged in a natural manner, but I must not again pass the statement in italics without disproving it. I would not sacrifice one real convenience of walk, or turf, or drive, or any necessary terrace in a garden, but I confess that from long and deep reflection I believe the old and common notion that because you make a garden near a house it must be geometrical, to be the most baseless of all the old saws or superstitions which yet remain to fetter improvement. Yet so well-rooted is the idea, that the true or opposite system has had no chance of an illustration except by accident. Now considering the thousands of country and suburban houses in the United Kingdom—houses of every type of architecture—that are adorned with Ivy, Banksian Roses, Virginian Creeper, and the like, in all the best cases, growing in the wildest and most graceful way; and considering, moreover, that houses so covered are about the most charming objects on which the eye can rest in the home landscape, it is rather odd that our geometrical gardeners have not long ago protested against what to them must really appear a manifest absurdity. But to the thoughtful the same picture may well suggest the question, if this intimate alliance of the purely artificial with the wildest grace of our most graceful plants, the climbers, produces such a lovely result, what is the basis of the so-called "law" which instructs us to devote from a rood to twenty acres of the garden round the house to geometry? I have no desire to see the lawns covered like the house, but I know he sees but dimly who tells me that I must

not attempt to group my Yuccas, or Gladioli, or Cannas, or varieties of Pampas Grass, or Lilies, or drooping Sparaxis, or Roses, or Clematises, or any of the plants I should like to grow, in as natural-looking a manner as I can.

No doubt it is my want of taste, but I HAVE NEVER SEEN AN HERBACEOUS BORDER THAT WAS IN THE LEAST ATTRACTIVE. I can admire individual plants, but the grouping was so utterly ineffective in old days—tall plants tied-up in bundles with sticks adjoining trailing plants and dwarf Alpines; plants with dead blooms running to seed mixed with others not yet come to perfection, so as never to make the border look effective at any one time.

I before named a few easily-seen places where highly-ornamental mixed borders exist. Perhaps it would be well if some of the readers of THE GARDEN were to supplement the list. But let it not be forgotten that the mixed border is only one of many ways of arranging hardy plants, at the head of which may be placed the properly-formed rock garden, which, of course, has no "bundles" or "sticks" upon it. And if the grouping was "so utterly ineffective in old days," is that any reason why it should be so in our own? Can we do nothing more than make an exhibition of "bundles" and "sticks" out of the more than 2,000 select kinds of hardy flowers now in our gardens? If not we deserve to be doomed to gaze for ever on an ugly patch of bedding out! Why I could name 300 kinds of first-class hardy flowers that require no staking, and that, therefore, need not be made into bundles.

Public taste may want educating, but I do not think that anything which has become really popular and adopted by those of refined taste as well as by the public, has ever been really meretricious, and it is on this account that I maintain it is savouring of want of courtesy to those who admire bedded-out gardens to cry down the present system, and to condemn those who admire them as having no taste.

I am afraid we cannot accept the popularity test. If we do we shall have sundry bad things putting in a good claim for highest merit, as, for example, some publications and books whom nobody ever suspected of doing anything but injury to the people; tall silk hats; French plays, odious from beginning to end, but listened to by crammed houses of the "refined" of the West-end of London; superstitions held by crowded millions on the banks of the Ganges or the Yellow River; the brainless folly of horse-racing betting so extensively patronised by all classes, from the Lord to the flunkey; not to mention many other things that have been "really popular." The impression is somehow left on the mind of most people who look back a little through the mists of time, that the history of human progress itself is but that of a constant succession of battles against ignorance, and darkness, and "bad taste."

And then Mr. Peach feels it is "want of courtesy" when anybody is angry with, or laughs at, his loved system. Surely if the system is a sound one, its admirers will not be so galled by a little of that free discussion which Britons have so long been in the habit of applying to almost every subject! The worst of it is, the criticism is true (as Mr. Peach candidly shows in his paper), and the laugh is deserved. Hence those who have prided themselves in their long ribbon-borders and other coarse ways of robbing the poor flowers of their beauty, seem to be annoyed that the true and natural system of gardening begins to make head-way. Of one thing all may rest assured, that a system of arranging beautiful plants which in any way gives offence to any human being is wrong. And the bedding system has done this in innumerable instances. Apathy to natural objects is common enough, but that anything in the shape of beautiful plants should be so arranged as to offend the sensibilities of any living being is sad to think of. As, however, most people are agreed that the bedding system has been overdone, and are anxious to see their way to improvement, the vital question is

WHAT ARE WE TO DO?

Most gardens are, to a great extent, arranged for the system, and to some extent committed to it. So much attention has been given to it for many years past, that many do not see their way out of the difficulty. They are, as it were, in a huge maze, from which there, at first sight, seems no outlet. But this maze is in a lovely and varied country, and towards its

margins there are many outlets, each leading to some beautiful scene. There is not one, but many panaceas for the evils which we deplore. It would be most unwise to advise any sudden substitution of any one other "system" for the bedding one. I do not plead for the substitution of any one system instead of this; but the cause of the whole vegetable kingdom against the one poor "system" that has so marred its beauty. Improvement must take place in many directions without any too sweeping change being made in the massing system till the higher and better phases of gardening are well established and compared with it. An immense improvement may be wrought in one direction by the adoption, so far as the means of each place will permit, of the system so well carried out now by Mr. Roger in Battersea Park. Few can spare so many fine plants; but all will benefit by a summer or early autumn visit to this garden, and all may embody some of its lessons, even if only using hardy plants, such as the Yuccas, and such as the Cannas, which are now regarded as virtually hardy. Every gardener and amateur who cares for ornamental gardening should make a point of seeing such places, in which the nobler and more artistic examples of gardening are to be seen. One thing nobody need hesitate as to what to do with, and that is the long dreary ribbon borders, which, when bare in winter, look as if they would produce a large and capital crop of Mangold Wurtzel. To lay down these ribbon borders in turf, and leave here and there beds, simple in form, to be filled in a more pains-taking manner than was possible with the great hungry border, would, apart from all questions of taste, much relieve the eyes of the visitor and the labours of the gardener. There are various other ways in which the aspect of the bedding out garden, properly so called, may be improved. Let us, for example, once see that the dead level of line and mass which is so offensive in many flower gardens is wrong, and begin to break it here and there with bold or stately plants—by any plants, in fact, that help to break the monotonous lines—and there is no end to the good we may do. A tall spike of Gladiolus leaning out of a shrubbery and over a line of Tagetes, or any other ribbon plant near it, will throw a halo of beauty all around it. Let a little of the unshorn grace of nature be infused into bedding out, and a startling improvement is at once effected. The numerous graceful conifers and ever-greens we now possess are of the highest value for the improvement of the monotonous and "over bedded" parterre, if rightly used. An erroneous belief, fixed in the mind of many, that beds in a formal garden should not be planted in a mixed manner, is likely to retard the progress of improvement. The idea is wholly wrong. Take the most formal bed, say one of those seen on some terraces with a well-marked stone margin, plant it in the most formal and geometrical manner and mark the result. Next year plant it on the mixed plan, not with a number of "perennials tied to sticks," &c., but with a selection of the finest things at hand, from Cannas to Gladioli down to Alpine edging plants. Let it show the unshorn grace of nature in every line and you will have something as superior to the first planting as an Alpine copse is to a plantation of small fruits. In such ways we may compare and get to the bottom of matters, instead of blindly resting content with the foolish old saying, so convenient as an excuse, "It is a matter of taste." The laws of taste in gardening are as immutable, and will one day be as well understood, as any simple mechanical laws. The other day at Witley Court, considered by some to be one of the finest geometrical gardens in existence, I noticed that some of the handsomest beds were mixed ones, Yuccas and Japan Honeysuckle and other hardy plants being freely and boldly used. That they were the most satisfactory in point of effect was not my own opinion only, but that of Mr. Westland, the very able gardener there. I mention this (and other instances in these papers) to show that wherever the nobler systems get a trial there is abundant evidence of their merit. But generally we live in a splendid fool's paradise, where nothing is seen but "bedding-out," and naturally there are doubts in many places as to anything else being worthy of attention. As to bedding itself, before I dismiss the subject, let it not be understood that I advocate its destruction. It is at present to pure gardening what conventional drawing is to art, and as a

minor aid in the embellishment of a garden it is valuable, but only when done in the most tasteful manner. Conventional work is common enough about all our buildings, but it, I believe, is not put on the walls to take the place of pictures.

As to other modes of improvement, they are almost innumerable, from tree pictures to the wilderness, with its myriads of British and naturalised flowers. Of the many thousand fine hardy subjects we now possess, innumerable agreeable combinations or pictures may be made. To indicate these is not possible in the limit of an article or an essay. To do so fully and to aid, in every way, true as opposed to ignoble gardening shall henceforward as heretofore be one of the main objects of THE GARDEN.

W. R.

Rare Crocuses.—I have lately bloomed one of the prettiest autumnal Crocuses I ever saw, viz., *Crocus cilicicus*, which is identical, I believe, with the *C. zonatus* of Gay. In colour it somewhat resembles *C. speciosus*, but the flower is much smaller and the petals narrower. At the time of its inflorescence, there is not the vestige of a leaf to be seen. It is a native of Asia Minor. I procured it through the kindness of my friend Mr. Gumbleton, who had it from that prince of bulbous horticulturists Herr Max Leichtlin, of Carlsruhe. I have also had in bloom *Crocus Kotschianus*, a most distinct and lovely pale mauve-coloured species, somewhat after the style of *C. byzantinus*, which has also bloomed well in my garden.—H. HARPER CREWE, *Rectory, Drayton-Beauchamp, Tring.*

Oxalis corniculata rubra.—This is an exceedingly beautiful little plant, forming patches of deep brownish-red leaves, studded with golden stars. I once had a small round bed of it, edged with a silvery Saxifrage and dotted over with *Echeveria glauca*, the effect of which was charming; but such is the astonishing fecundity of this plant, that I bitterly repent ever introducing it into the garden. Every part of my garden is now covered with it, even the gravel road and the walks. Every pot on every shelf in my little greenhouse swarms with it, and I fancy I can see some bits on the top of the house. Much against my inclination, I have destroyed this summer thousands of this beautiful plant. If you have any spite against a person, advise him to plant this *Oxalis* in his garden, and you will have ample revenge. I never look at it but I think of the plagues of Egypt. Still it may have its proper place. Old quarries and rough rocky places, especially in a calcareous district, would suit it well, and their bareness might with advantage be hidden by a handsome plant which speedily covers the most unpromising surfaces.—T. Williams.

Solanum jasminoides.—At page 369 it is asked if this interesting half-hardy climber occurs in two varieties. I have had a long acquaintance with it, but have only observed one type of it. In Maund's "Botanic Garden" this variety is described as pale purple. This does not fairly express the colour, as it runs too much into white to be called purple; but I have never seen it a pure white. The late Dr. Lindley supposed that *S. jasminoides* might be a variety of *S. Seafortianum*; but that variety is described as having pink flowers, and to have been introduced from Barbadoes in 1804, while *S. jasminoides* was introduced from South America in 1839. The Jasmine-like *Solanum* grows rapidly here, is perfectly hardy, and one of the most graceful and beautiful climbers in cultivation.—CHAS. McDONALD, *Phoenix Park, Dublin.* [At Kew a plant of the Jasmine-like *Solanum* has lived out of doors for many years, with no other protection than that of a mat thrown over it in very severe weather. This plant has been flowering throughout the past summer, and even at the present time there is a good deal of bloom on it.]

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Exotic Water Lilies out of doors.—I visited a colliery in Staffordshire the other day, and saw some of these beautiful Lilies, both pink and white, growing in a square pond, by the side of which was an engine continually pumping hot water that kept the pond at an even temperature.—H. S., *Rugeley.*

Toad-flax-leaved Speedwell (*Veronica linariifolia*).—In passing through the Temperate House at Kew the other day, I noticed a plant in flower bearing this name, and it struck me that it might be valuable for the winter decoration of conservatories or greenhouses. It is a shrubby kind, with white flowers in showy spikes that are produced somewhat freely. It will doubtless prove useful as a companion to the well-known *V. Andersonii*.—J. S.

Hardiness of the Japan Aralia (*Aralia japonica*).—In the first volume of THE GARDEN (page 63) I see that this plant is spoken of as having withstood last winter out of doors in Regent's Park. To this I would add that several fine examples of this *Aralia* have stood out in Battersea Park for several years, unprotected. I noticed a specimen of it, 5 feet or more in height, in flower in a shrubbery in the subtropical garden there, on the 5th inst. At this season of the year its large, deep green, shining leaves are particularly striking, and it may be used with good effect either as an associate of medium-sized shrubs or isolated on turf.—P. BARNES.

THE PROPAGATOR.

INCREASING LILIES.

THE Japan Lilies form very useful ornaments in the flower garden and amongst dwarf shrubs in early autumn, but a great drawback to their general use is the slow increase of the stock and the expense of purchasing them. Good flowering bulbs, however, can be obtained from home-saved seed in three or four years; but for seed-producing the plants are better grown in pots. Sometimes they set freely without assistance, but it is perhaps the surest way to assist them by fertilisation. The plants grown in borders also produce seed pods, but, unless in the extreme south of England, and a few other favoured localities, they commonly fail to ripen the seed. The seeds may be sown in pots or pans of peaty soil in early spring, the pots being placed on back shelves of a greenhouse, pit, or cold frame, and near the glass. In these pots the seedlings may be allowed to remain the first year. Next spring pot them singly into large 60's or 48-sized pots, according to the strength of the bulbs; keep them in the greenhouse or frame during the spring, but they may be placed outside on pieces of slate or beds of ashes in summer. After being wintered like the older bulbs, some may require another shift, and some may remain in their last year's pots, with the assistance of a top-dressing. Their summer treatment may be like the last. The next season some of the plants may flower; but if strong bulbs are the object, pick off the flower buds, and increase instead the vigour and strength of the leaves. They should be wintered as usual, and planted out in the reserve grounds in beds or in nursery lines on a dry day in February. In planting, care should be taken not to destroy or injure the thick fleshy roots attached to the base of the bulbs; for, although the bulbs undergo a resting period and comparative dryness in winter, these fleshy roots retain their vitality, and are the great assistants of strength in spring. Under and over the bulbs strew a little sharp sand, and, after covering them about three inches, mulch the beds with two inches of half-decayed manure. In these beds they should remain throughout the summer, and in October or February any bulbs required for other purposes may be lifted. Lilies are also increased by means of bulbets produced about the base of the large bulbs, and also about the stems. These should be removed in potting, and treated in precisely the same manner as seedlings, only they will be one, and in some cases two years' growth in advance of seedlings. The scales of the bulbs, if well formed and uninjured, taken off separately and inserted into a pan of sandy peat, also become the progenitors of young bulbs. I have seen excellent bulbs of the Japan Lilies obtained in nurseries by sowing on the surface of the beds in spring some white Clover seed. The ground being well manured and highly cultivated, soon produces a dense Clover carpet, which in summer serves as a protection from strong sunshine and drought, though no doubt it greatly robs the soil. The Lily shoots come up clean through it, and flower well. When the roots were examined in winter they were found to be healthier, larger, and much superior to others alongside of them grown without any surface protection, and others mulched with litter. This, though unsightly in the flower garden, is by no means out of place in the reserve ground; and in the flower garden the Clover might be substituted by several close-growing Alpine plants.—W. F.

THE ART OF GRAFTING.

(Continued from p. 373.)

III.—BUD-GRAFTING.

GENERAL DIRECTIONS.—The eye or bud, accompanied by a certain portion of bark, detached from a branch, is the scion in this mode of grafting. The strip of bark attached to the eye should comprehend the entire thickness of the cortical layer as far as the alburnum exclusively. If the operator cannot remove it with exactness at this point, it will be better to cut a small portion of the wood with it than to want the smallest part of the inner bark. The portion of bark may be either of a tubular form or like a shield; whence the terms shield-bud grafting and flute-grafting. The stock is a growing tree or shrub. The introduction of the scion is performed by inserting it under the raised bark of the stock at a time when the condition of the sap allows it to be easily detached from the alburnum. Any branches which might interfere with the operation should have been cut off some time previously, so that the course of the sap may not be checked by doing so at the time of grafting.

GROUP I.—SHIELD-BUD GRAFTING.

The term shield-bud has arisen from the form of the strip of

bark which is attached to the bud-graft. The shape of it, however, is variable; it may be oval, square, triangular, obtuse, &c., but in any form it is called a shield-bud. The buds are taken from shoots of the current year, if the operation is performed in summer; and from shoots of the previous year, if the budding is done in spring. Shoots of a medium size are preferable to very strong or very weak ones. The eyes should be well formed and not opened. We make two subdivisions of this mode of grafting, according to the manner of inserting the bud:—1. By inoculation, or under the bark of the stock. 2. By veneering, or removing a portion of the bark, and putting the bud in its place.

SHIELD-BUDDING BY INOCULATION.

GENERAL DIRECTIONS.—The stock should not be budded unless the sap is flowing. This may be ascertained by raising the bark with the grafting-knife. If the state of the sap is satisfactory, the bark will detach itself easily, without tearing, and exhibit a slight moisture underneath, which will promote the union of the bud and stock. It is of considerable importance that both parts should be in an equal condition of growth; but should there be any difference, it is better to have the stock in a more advanced state of sap than the bud. The shoots from which the buds are taken should also be in a state of sap and be sufficiently woody. Their condition as regards the sap is ascertained in the same way as that of the stock, and the wood is shown to be properly ripened by the well-pronounced colour of the outer bark, by the formation of the terminal bud, and by the elasticity of the tissues under the pressure of the finger. But shoots rather advanced in maturity are to be preferred to those which are in a completely herbaceous stage of growth; however, it is better to have them in the condition mentioned above.

ORDINARY SHIELD-BUDDING.

Of all the methods this is the most extensively used in nurseries and gardens.

PREPARATION OF THE SCIONS.—The shoots, having been selected according to the foregoing directions, are prepared



Preparation of the Scion for Shield-budding.

by rejecting whatever is useless for budding. In the first place, we may observe that the eyes in the middle of the shoot are generally the most suitable for use in shield-budding; those at the base and top have often the defect of being imperfect, herbaceous, blind, or too much disposed to fruit. The bud to be selected should be well formed, neither latent nor a fruit bud, nor damaged in any way. Shoots of forced growth, and those which have too great a tendency to produce

flowers, do not afford suitable eyes for budding purposes. If, however, there is a deficiency of good buds, one may employ doubtful ones, using two instead of one, or one good bud and one doubtful one on the same stock. There are some shoots which appear uncertain, but which turn out well with the help of pinching. Overgrown spurred shoots are not to be despised, nor are those which are covered with an abundance of leaves. The Pear branch (A) having been selected, the extremities (B and C), which are useless, are cut off, and the leaves cut down on their stalks to within about half an inch from the axillary eye of each (as shown at D'). The stipules are also pinched off. The scions thus prepared are to be



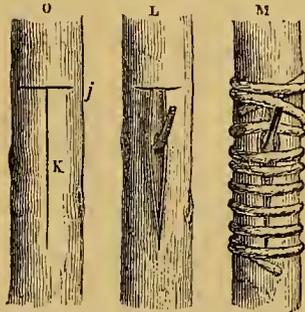
Removing the Bud.

immediately placed in the shade in a cool place, with their lower extremities plunged in a vessel containing water or damp moss. They should not be left in the water more than five or six hours, unless they are in a very dry condition, when they may be left in it for a day, with the ends only in the water in a shady place, and then for a night placed in the grass or moss, in order to restore the natural moisture which they may have lost. The nurseryman who prepares in the evening scions to be used next day leaves them all night in cool grass or in a damp cloth. Should water not be at hand, the scions should be buried entirely in soil until they are required for use. They should not, however, be left unused for more than twenty-four hours. Scions of evergreens should not be stripped of their leaves; these should merely be cut off through the middle of the blade, although even this is not absolutely necessary.

REMOVING THE BUD.—The shoot is held in one hand and the grafting-knife in the other. The bark is then cut through about half-an-inch or so above and below the bud (as at *f, f, E*.) Then holding the shoot, as shown in the illustration, the blade of the knife is inserted just above the upper incision and driven in a slanting direction as far as the alburnum; then carried along towards the lower incision, following the course of the dotted line (*g, g, F*.), and observing the bending at *g'* just under the bud. In consequence of the two first incisions (*f' f'*), the bud comes out, as shown at *H*, cut clean at both ends. At the back there is no wood except under the bud: this little woody tube is its *germ*, so to speak, and without it it would not grow. Should there be a splinter of alburnum attached above and below it, it should be seized by the upper end and pulled off smartly; if taken by the lower end there is danger of tearing off the germ along with it, and the bud, if deprived of this, will not grow. Nevertheless if the sap of the stock is in full flow, there will be no harm in leaving a small particle of wood under the bark of the shield-bud; it will help to render the union of the parts more intimate. A skilful operator seldom or never removes this little piece of alburnum, as he knows that by doing so he would run the risk of injuring the bud or of exposing it too long to the air. When he has an abundant supply of scions, he does

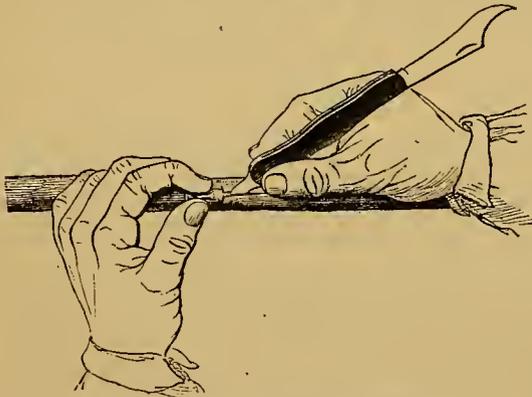
not hesitate to throw away any bud that happens to have been removed in a doubtful condition, and use another in its stead. Scarcely will he lose time in trimming squarely the ends that may have been cut irregularly. Some operators proceed in a different way, among whom M. Edouard André holds the scion-branch head downwards and removes the bud by passing the knife in a direction contrary to that which has been described. The strip of bark having the form of an antique shield, square at the top and narrow at the base, is easily inserted into the stock.

INSERTION OF THE BUD.—The bud having been detached from the shoot, the bark of the stock is opened by making two incisions with the grafting-knife in the shape of a T, to the full depth of the bark; then, with the ivory spatula of



Inserting and Tying the Bud.

the implement, the edges of the longitudinal incision (κ) are raised at its point of junction with the incision (j). At the same time, the other hand, holding the bud by the stalk, slips it into the incision as quickly as possible, so that the parts underneath may not suffer from exposure to the air. Care should be taken not to remove the bud from its parent shoot until at the moment when it is to be inserted in the



Opening the bark for insertion of the Bud.

stock, and also that no foreign body be allowed to introduce itself at the same time into the incision. The inserted bud is represented at L.

BANDAGING THE BUD.—The best bandages for shield-budding are wool, cotton, leaves of Typha or Sparganium. We have already mentioned, in the chapters on bandages (p. 213, Vol. I.) how they are prepared, so as to be pliant when they are used. The bandage is wound in a spiral manner round the stock (as at M), commencing at the upper part, as by doing so we avoid the danger of raising the bud and displacing it from the incision, which is very likely to occur, especially when the buds are large and broad. One end of the bandage is placed on the horizontal incision of the T, round which two or three turns are made. It is then wound in close spiral turns about the graft as far as the bottom of the vertical incision. The end of the bandage is passed through the second last turn, and fastened securely. The parts to be most firmly tied are at the top and bottom of the incision, and just above and below the bud. The tightness of the bandage must, however, be within certain limits; it must not go so far as to bruise or fray the

bark, and will be sufficiently attained if the bandage is not moved by passing the finger over it.

PRESERVATIVES AGAINST DRYNESS.—In addition to the bandage, the leaf of a tree is placed over the grafted part, when the stock is grown against a wall in the full sunshine. Mastic is never used in shield-bud grafting. The only case in which it might be used is when the bandage is likely to become loose, then the application of mastic would serve to keep it in position, and preserve the graft from the action of the atmosphere. When the Vine is shield-budded, soil should be heaped up about the stock. The operation should be performed about the end of July, and the soil kept about the graft for a fortnight. We have known Mr. J. Gagnerot, of Beaune, operate in this way with complete success since 1865.—*C. Ballet.*

(To be continued.)

THE KITCHEN GARDEN.

EARLY OR VERY LATE POTATOES & THE DISEASE.

THREE facts seem pretty firmly established concerning the Potato disease. The first is, that the earliest varieties are safe. All Potatoes harvested or ripe before July will be out of the way before the disease comes. It was so this season, and, in fact, in all former seasons, as far as I can remember. One of the most important questions, then, for cultivators is the turning of their attention to earlier varieties, and the treatment of the present earlies in such a manner as to make them form tubers sooner. A good deal remains to be done in both directions. The treacherous frosts of April and even May are much against the prospects of earlier sorts. From, say the 20th of May to the 14th of July, is not a long time for the crop to be matured. Still a good deal may be done by the Potato in seven or eight weeks, provided we have helped it hitherto. This help can be rendered by sundry earthings-up of the stem during the early period of growth. The earth renders the covered portions frost proof, and it is astonishing how soon the upper part of these stems recovers if the base is thus strengthened and kept safe. Then as to forming tubers early, careful storage and greening of the sets promote this in a wonderful degree.

A seed Potato that has been stored, freely exposed to the air, in a temperature ranging from 35° to 45°, neither higher nor lower, and as near the medium of 40° as possible, and planted with its first shoots entire, will ripen its tubers at least a month or six weeks sooner than Potatoes stored in the ordinary way, and picked once or more before planting. This is a fact of immense practical importance in the production of early Potatoes, inasmuch as the disease visits us at a time more or less fixed, ranging from the middle of July to the end of August. The second fact is that the green or late crops are comparatively, if not absolutely, safe. It follows, therefore, that by planting late Potatoes late, say at the end of April or beginning of May, or by raising later varieties, we might obtain a late crop of some Potatoes after the disease had passed away. The third and last fact is that greening the seeds is one of the simplest means of stamping out the disease.

D. T. FISH.

Club in Cabbages.—When plants of the Cabbage tribe become Turnip-rooted, please to say whether the fault is in the seed, the manure, or the ground? I have tried Broccoli and Savoys this year on different kinds of soil and manure, with the following results: Savoys planted early in August in good old garden soil, on which no Cabbage had been grown for two years, manured with decayed leaf and vegetable manure, have been nearly all Turnip-rooted, while the same plants on old pasture, from which only two Potato crops had been taken, are healthy and free from Turnip roots. On the same soil and on the same plot of ground, a lot of fine late Broccoli has been quite destroyed by means of the same disease. On an adjoining plot of ground, consisting of the same soil, I planted early White Cape Broccoli, which have quite escaped root disease, and are growing remarkably well; the three last lots were manured with stable dung, the soil being a rich, light, fresh loam—an old pasture broken up two years ago. I am quite puzzled as to the cause which has produced disease in one case and not in the other. Kindly enlighten me on the matter.—*H., Ramsay, Isle of Man.* [The disease of which

you complain is caused by one or more species of insects. A good remedy is wood ashes dropped into the holes along with the plants at planting time. Some ashes should also be incorporated with the soil of the seed bed, as well as strewed over the ground generally. Another remedy is to dip the roots of the plants before putting them into the ground into a mixture of soot and water, with the addition of a little saltpetre. This should be made of the consistency of thick paint, using a pound of saltpetre to each gallon of soot.]

A Market Potato.—The Dawes' Matchless Kidney and its congeners I can heartily commend to the attention of growers for market as being worthy of special notice. Second earlies in order of cropping will, if planted early, be ready for lifting soon after the Ashleaves are over, as their tubers when fully grown are very large; these are therefore better for market when about two-thirds grown. The flesh and skin are of the whitest, and they boil mealy at any stage of lifting. As a proof of the good market qualities of Dawes' Matchless, I may say that a near neighbour had fourteen bushels of it from me last year to plant this spring. They were put into good well worked soil, and the produce was lifted as soon as large enough and sent off to market. Not a peck of bad ones was found, the crop was exceedingly clean and even, and realised quite three bushels to the rod of ground, a result so satisfactory, that a much larger breadth will be grown next year. As good kidney Potatoes usually fetch in the market more money per bushel than round ones, it is evident that the Dawes' Matchless section present special attractions to growers. —A. D.

PUBLIC GARDENS.

THE MELBOURNE BOTANIC GARDEN.

"History repeats itself," not only at different epochs amongst succeeding generations, but occasionally at the same date in different quarters of the globe. During the past summer, while the Hooker-and-Ayrton controversy was gradually culminating into a salutary exposure of the defects in the management of the Royal Gardens at Kew, a very similar state of things prevailed at the Antipodes. For several years past the State Botanic Garden at Melbourne had been without a curator, and its management was entirely in the hands of the "Government botanist," the Baron Von Mueller, under whose directorship its condition became so deplorable as to call forth the energetic remonstrances of the Melbourne press. We learn from the *Australasian* of last July that, before the arrival of Mr. Ferguson (the recently appointed curator), "the whole place was a wilderness," and that it was "only by the judicious application of his horticultural knowledge and skill that it was brought into a commonly decent condition." In fact, everything in the crowded garden had been allowed to grow as it liked, and the consequence was that many choice botanical specimens had been overrun and destroyed by their more robust and rampant neighbours. "That the State garden is the thing it now is," says the *Australasian*, "is due to the absence of a curator, and to the thorough incompetence of the Government botanist to fulfil the duties of the displaced official."

The new curator at once set to work, by thinning out the crowded beds and shrubberies, much to the dissatisfaction of the Baron, who forthwith proceeded to lay his grievances in public before the Hon. the Commissioner of Crown Lands and Survey. Complaining that the collection of botanical specimens had been lessened by Mr. Ferguson's operations (which was only true in that the curator had removed superfluous specimens, while retaining sufficiently numerous examples of all the existing species), the irate director boldly denounced the Hookerian dogma that "it could only devolve upon a botanist to give out directions for the treatment of plants," and that "no one but a real botanist could know the requirements of plants." This, as the *Australasian* naively remarks, "is a fallacy of considerable magnitude, which will pass current with none who know the difference between descriptive botany and practical horticulture, but may tickle the ears of that portion of the public who use 'botany' and 'gardening' as convertible terms."

It is fortunate for the people of Melbourne that the Baron's arguments have failed to convince the State authorities of the soundness of his *laissez-aller* administration. That he could have expected to do so, in the face of such undeniable proofs of his negligence or incompetency, is not surprising

when we consider that men of his stamp, in the sustained sublimity of their self-esteem, invariably ignore the possibility of error in themselves, and of a wider and juster range of thought in others. Henceforth we may expect that, under the skilful and energetic supervision of Mr. Ferguson, a system of thorough reform will be carried out; yet even when this is effected, there will still remain to the people of Melbourne an arrear of unpleasant reflection in the thought that "the money annually granted for nine or ten years for the support of the gardens, and squandered to a great extent on objects foreign to the interests of the colony—such as the collection and transmission abroad of large quantities of plants and seeds—would, if judiciously employed upon the garden and adjoining domain, have raised for Melbourne an establishment second to none out of Europe." The only consolation we can offer them is, that "It is never too late to mend."

W. M.

THE PARKS OF STOCKHOLM.

THE beauty of its parks is one of the distinguishing features of Stockholm. The Djurgard, or Deer Park, is singularly picturesque, from the abundance of wood and water. The circumference is about 21 miles; the ground is very undulating, and much intersected by fjords. Added to this the Oak and Beech trees have attained a magnificent growth, which is really surprising in such a northern clime, where they cannot reckon on more than two months and a half of summer. During this brief period of fine weather the people lead an out-of-door life, and seem to enjoy themselves thoroughly. The Palace of Rosendal is in the Deer Park. It is an exquisite spot; the gardens are quite open to the public, who may walk round and enjoy the wilderness of flowers that bloom here in great profusion, or they may sit at their ease and admire the beautiful proportions of the celebrated porphyry vase, which is placed in the centre of the lawn. The palace, which is furnished with much taste, contains some good modern Swedish pictures. There are numerous villas and ornamental cottages dotted about in the park; but, as they are not walled-in or inclosed, they heighten the beauty of the scene by means of the flowers and shrubs, which contrast so well with the rude masses of broken rock which here and there encumber the ground. There is also the Haga Park, another favourite place of resort in the immediate vicinity of Stockholm. The numerous islands in this park are prettily laid out, and many parts are very rocky and broken, while others present sylvan glades, shadowed by snperb trees. The park of Carlberg must not be forgotten. It also contains some magnificent trees, especially a fine avenue leading to Drottninggatan. The palace in this park, which was formerly a favourite residence of Charles XII., has been transformed into a military college. There are several royal residences round Stockholm, and among them, Drottningholm should be visited, as it is one of the stateliest of the summer residences of royalty. The gardens and surroundings are very much in the French style—more artificial than beautiful. In the grounds there is an absurd erection—a Chinese pavilion—built by Adolphus Frederick as a birthday surprise for his haughty queen Louisa Ulrika. The environs of Stockholm are almost inexhaustible in beauty, for on one side there is the Baltic, with its myriad islands, and on the other side the lovely Målar Lake, which has a length of 75 miles, stretching into the heart of the country.

THE BELFAST BOTANIC GARDEN.

THIS garden, says a Belfast correspondent, which is open to the public in consideration of an admission fee, is situate contiguous to the collegiate institutions of the town, and is a favourite resort of the fashionable portion of the inhabitants; while, by a judicious arrangement, all classes are admitted at proper intervals, and during the season horticultural and floricultural exhibitions, and musical entertainments, take place within its enclosures. It comprises an area of about seventeen acres, and is thickly studded with trees of mature growth, which give it a park-like appearance. It abounds in ornamental walks, winding through undulating slopes, with a rich greensward toning down the floral attractions on all sides. A special feature in the laying out of the grounds is the series of vistas opening out from almost every point of vantage; and the approaches to these are so conceived that the visitor scarcely ceases to admire one before another bursts upon the view. The naturally formed hill and dale, with overhanging trees, favour the whole design; and, to complete the effect, art has supplied that in which nature was deficient or abrupt. Perhaps the most noticeable feature

to the ordinary observer is a portion of the gardens within sight of the river Lagan, entirely appropriated to floral and ornamental purposes. It comprises a series of circular areas, varying in size, with rising tables of greensward towering up amphitheatrically, beautifully designed flower-beds gracing the base, and hardy productions springing from between the rockwork in every direction. From either extremity an uninterrupted view of the whole is obtained, and a sheet of ornamental water in the rear completes the picture. The effect produced may be pronounced unique. The more important and recent improvements have been effected by Mr. Johnston, the curator, who resides in a delightfully sequestered spot in the grounds, and who has made the gardens the subject of his special study. In many gardens of this kind, a great drawback to their success is the absence of sufficient flowering plants to supply the vacancy between the fading of the spring and the blooming of the autumn plants, leaving barren the more picturesque beds during the very season when the public would have the best opportunities of inspecting them. Mr. Johnston has remedied this defect. He has so laid out and planted his beds, by a judicious selection of seeds and plants to appear in succession, that, at the present time, considerable masses of bloom decorate them. The collection and propagation of Ferns are now receiving the attention to which they are entitled. Some good specimens are already secured, including the New Zealand *Leptopteris superba*, and a fine tree Fern, some twenty feet in height. A considerable space is covered with glass; the conservatory, from its spacious and massive proportions, forming a prominent feature. On the whole, taking into consideration the exceptionally unpropitious weather of this year, and other local disadvantages, the curator has succeeded in placing these gardens in a position which the most sanguine could scarcely have anticipated. Just now, the most attractive feature in these gardens is the Camellia house, to which Mr. Johnston, would appear to have devoted much well-directed attention. On the lower stands, fringing the pathway as it were, are rows of Fuchsias rising tier-like; behind are the flourishing Camellia plants, and other and taller plants in the background complete the picture. All the plants present a healthful appearance, far above the average. There are some exceptionally fine specimens of standard Fuchsias, from 4 to 12 feet in height, some of them 5 feet across, and the whole so arranged that an uninterrupted view is commanded. This department also contains an imposing array of minor decorative plants, ranged in front of the larger ones, including Geraniums, *Campanula pyramidalis*, and *Lilium auratum*. A number of climbers running along the walls have an agreeable effect. One of the most notable features is a magnificent Vine, occupying one end of the house, on which are three hundred bunches of fruit. The pathway is overhung by a number of rustic flower baskets of varied design, from which run in graceful confusion rare climbing plants.

GARDEN STRUCTURES.

ARCHITECTURAL FORMS OF GARDEN STRUCTURES.

THERE is much to be said on the subject of the forms of conservatories, and of other buildings of that class, erected for the protection of such exotic plants as are unable to bear the rigours of our northern climate. Some garden architects have sought to give an importance to erections of this kind by the adoption of more or less massive forms of design, founded on those which are known to be effective in buildings of stone or marble destined to far different purposes. With this feeling predominant, horticultural structures of far too massive a character have been designed, which frequently produce a signally grand effect in palatial gardens. They are, with their conspicuous domes, and their ranges of arched window-lights, essentially fine objects, when only viewed externally, and they group well with solid masses of foliage, especially when these are made to form a broad and reposeful background; nevertheless, buildings erected in this taste cannot, in the strictness of æsthetic criticism, be esteemed well fitted for the particular purpose for which they have been constructed, either in idea, or in their actual suitability as a means of protecting plants from the effects of a low temperature, and at the same time affording them a maximum of uninterrupted light. Every solid window frame, every heavy cornice, in proportion to its breadth and solidity, acts injuriously in excluding the light, which is the great strengthener and beauty-giver to nearly all vegetable

organisation. Even the whitest and most translucent glass is in itself an undesirable impediment between the plant and its great vivifier, and the injurious effect of this impediment is increased in proportion to the distance of the plant from the glass. Hence, the introduction of more or less lofty domes as mere architectural features is necessarily a vicious principle in structures of this class. If, indeed, the dome were kept very low, the objection would be considerably modified. The plants would, however, still be too far from the light, which would be still further impeded if, for the sake of architectural effect, too great a breadth of wood or iron work were permitted about the springing of the dome, or along the lines of the connecting cornices. In short, "floral temples" of this class, though not without their advantages as garden objects, and adapting themselves tolerably well to a class of plants generally known as conservatory plants, are yet far from desirable, for the reasons above stated. The engraving exhibits some of the bad features of the "floral temple" school of horticultural structures, of which it is a very good example, but, after all that can be urged in its favour, it does not, and no building of its class ever can, embody the ideal of such plant-houses as would be really the thing required. The true ideal of a plant-house



Architectural Conservatory.

represents itself, as it should be, as a graceful garden object, exquisite in general form, and withal so delicately constructed that it would exclude only a minimum of light from the plants, which are so greedy of its beneficent influences; while, at the same time, its form should be studiously and æsthetically pleasing.

A very distinct school of architecture in glass, embodying these very generally and slightly indicated principles, for horticultural purposes, is now in course of development. The aim is beginning to be, the elevation of the slenderest possible sheeting of glass, so lightly raised, so invisibly supported in its aerial graces of flowing forms, that it might almost seem, by a little stretch of fancy, to be a glistening gossamer shelter, lightly blown forth upon the autumn wind, and which, instead of wasting itself upon hardy Hawthorn hedges, had been gracefully puffed into the form of a fairy home to screen the tenderer flowers from the bitter blasts of the coming winter. This fancy has been to some extent realised by the better kinds of plant houses at Kew. The graceful curving of their elegantly balanced lines, the lightness of their supports, and the total absence of all those massive architectural forms which are more properly suited to solid structures of stone or marble, actually impart to these successfully-designed plant-

houses a gossamer-like lightness of character which, seen through the soft mists of an autumnal morning, is very charming and fairy-like in effect. When critically examined, however, these graceful structures exhibit faults of detail which it would be invidious to dwell upon here; but, on the whole, they may safely be taken as a basis from which the future advances of horticultural structures may start with a certainty of being in the right direction; while to their designers is justly due the credit of having been among the first to inaugurate, however imperfectly, the true principles upon which garden structures of that class ought to be founded.

Deards' Patent Centrifugal Heating Apparatus.—In THE GARDEN of the 5th ult. (p. 299) engravings are given of this apparatus, as exhibited at Birmingham last June. I have seen it in operation for nearly twelve months, and can speak favourably of its heating capabilities. I have seen a very small-sized apparatus keep 40 feet of 4-inch pipe nearly up to the boiling point for six hours, with only twelve pounds of small coke. A small saddle boiler wants a stoke-hole, and a bricklayer besides, whose work is generally expensive, but Deards' apparatus occasions little or no trouble in the way of setting, and the fuel needed for it, when applied to ordinary purposes, is next to nothing.—H. H.

GARDENING ROUND LONDON.

(DURING THE PRESENT WEEK.)

BY OUR SPECIAL REPORTER.

PRIVATE GARDENS.

The Flower Garden.—New walks are being made where required, and old ones freshened up by means of a surface dressing of clean gravel. Irregularities in lawns are being rectified, and flower beds lessened or increased according to taste. For such alterations good turf, where it can be obtained, is preferable to sowing grass seeds. Turf laid down now becomes established before spring, whereas grass seeds, which should be sown in spring, necessitate the ground being bare during winter, and even afterwards it is long before anything like an enjoyable grassy turf can be obtained. Box edgings are being repaired, and in some instances wholly renewed. Flower beds not intended to be filled with spring blooming plants are manured, deeply dug, and laid up roughly. Fresh turfy loam, where easily obtainable, is also added to them. Beds prominently situated are filled with Pansies, bedding Violas, Iberises, Alyssums, Daisies, the latter consisting of both the red and white double-flowering kinds, and also variegated-leaved sorts; dark crimson-leaved Ajuga, Arabis, both green and variegated; Hepaticas, Wallflowers, Mule Pinks, Anemones, dwarf Phloxes, Saponaria ocyroides, Aubrietias, Cerastiums, different coloured Primulas, and Polyanthes, Saxifragas, Ranunculuses, Gentians, Dicentras, winter Aconite, and other plants of an early blooming character. Besides these many spring blooming annuals are used, and at regular distances apart bulbous plants are inserted. Dahlias are being lifted and the soil shaken from their roots, which are dried and carefully stored. Bulbs of Tigridia are lifted and stored in dry sand. Gladioli are also being lifted with the leaves adhering to them, and are hung up in bundles in a cool house orinery. In some cases the stalks are half cut off. Shrubs of all kinds are being transplanted, especially such as are deciduous. Where they grow too thickly some are thinned out, and such as are fit for forcing are laid aside for that purpose.

Conservatories.—These are now gay with Chrysanthemums, the taller plants of which are interspersed among Camellias and other evergreen shrubs. The smaller ones are placed on side shelves, among such associates as Centaureas, zonal Pelargoniums, Primulas, Cyclamens, Solanums, Fuchsias, Begonias, and Nerines. Any Calceolarias and Cinerarias requiring a shift are being potted, and placed in a cool, airy house or pit. To Cyclamens is given plenty of air, but at the same time they are greatly benefited by a little fire-heat. Mignonette in pots is repotted as required, without breaking the ball. To plants of tree Mignonette a central stake is applied, and when they get too large for that, over the pots is placed a pyramidal shaped wire trellis, to which they are attached. Plants of *Plumbago capensis*, Fuchsias, &c., are laid on their sides, under the stages of greenhouses. Herbaceous Begonias are likewise laid under stages, except such kinds as *B. fuchsoides*, *Saundersii*, *Weltoniensis*, and *spathulata*, which are now finely in bloom. *B. manicata* is also kept growing, in order to afford a supply of blooms a little later in the season. Of Heaths, autumn *gracilis*, *colorans*, *cafra nana*, *melanthera*, some of the *hyemalis* section, and a few others, are now prettily

in flower. All Heaths are kept in the coolest part of the conservatory or greenhouse, and are but moderately watered. Mildew is kept in check by means of dustings with sulphur. Both white and red blooming *Bouvardias* are very attractive just now, and are allowed the warmest part of the conservatory, or an intermediate house, weak manure water being applied in cases in which the roots are pot-bound. *Jasminum grandiflorum* is also beautiful just now; if in a moderately cool house the flowers keep longer in good condition than they do in a warm one. The earliest of the *Epiphyllums* are now in perfection in the warmest corners.

Forcing Houses.—In these a moderately brisk temperature and moist atmosphere are maintained. *Sericographis Ghiesbreghtii*, a valuable winter plant, is placed near the glass, syringed every fine day, and plentifully watered; *Eucharis amazonica* is plunged in bottom heat, and is also liberally watered, as are likewise the *Poinsettias*. Young plants of *Euphorbia jacquiniæflora* are kept as near the glass as practicable. *Justicias*, *Pentas carnea*, *Salvias*, *Heliotropes*, &c., are also brought into flower in these houses, and from thence are transferred to cooler situations, in which they are subjected to a drier temperature. *Camellias* are removed from the forcing house as soon as their blooms begin to expand. *Rhododendrons*, *Azaleas*, *Kalmias*, *Weigelas*, *Luculia gratissima*, *Forsythia viridissima*, *Deutzia gracilis*, *Dicentras*, and Dutch bulbs that have commenced growth out of doors under ashes, are also placed in these houses in quantities as required, but at first in the cooler parts of them.

Stoves.—The temperature of stoves is now kept at about 65° at night, with a rise of 5° or 10° throughout the day. Plenty of air is admitted in favourable weather at the top of the houses, but the side ventilators are seldom opened. *Gloxinias*, *Achimenes*, and *Caladiums* at rest are placed under stages, the pots being laid on their sides. Such plants as were in cooler houses throughout the summer are now brought back and placed in the coolest part of the stove, in which a certain amount of beauty is maintained by means of fine-foliaged plants, such as the different sorts of *Croton*, *Dracæna*, *Alcascia*, green and variegated-leaved *Screw Pines*, *Palms*, &c. These, tastefully associated with *Ixoras*, *Aphelandra Roezliana*, *Rondeletia speciosa*, *Æchmea falgens*, *Cypripedium usigne*, several kinds of *Cattleyas*, *Vanda carulea*, &c., produce quite a nice effect. In indoor ferneries, in which, on account of the freshness of their appearance, there is now a growing interest, and *Orchid* houses, a moderately moist atmosphere is maintained.

Indoor Fruit and Forcing Department.—All suckers of *Pines*, as soon as ready, if required for use, are taken off and potted. *Succession* plants are kept moderately dry; indeed only such as are swelling fruit are kept anything like moist. The bottom heat ranges from 75° to 80°; the atmospheric temperature is kept at about 65°, except in dull weather, when it is lowered a little. *Retarded Grapes* are kept dry and in a temperature a little above that out of doors. *Vines* intended to ripen new *Grapes* in April are shut up preparatory to forcing them, and a night temperature of 45° and a day one of 55° is at first maintained, in some instances, by means of tan, leaves, or leaves and dung laid on the floor. *Vines* in pots are kept out of doors, with the rods nailed against a wall, until such time as they are taken into the forcing house to furnish early *Grapes*. *Figs* are being top-dressed and some of the plants shifted; they are then placed in a cool, airy house or shed. Such plants of *Cherries* as require a shift now receive it; they are then plunged in leaves in an airy house or sheltered place out of doors. *Peach* and *Nectarine* houses are kept cool, and are allowed plenty of air. *Strawberries* intended to be forced are protected from rain by setting them in frames or piling them on their sides in a ridge of ashes, a practice which preserves the crowns from being injured by frost. *Rhubarb* and *Sea-kale* roots are placed in the *Mushroom* house or, in fact, anywhere in which a temperature of 55° is maintained; *Chicory* and *Dandelions* are also forced and blanched in similar situations. *Successional* sowings of small salads are made according to demand. Some *Cabbage Lettuces* have been planted in *Peach* houses for early spring use, and *successional* sowings of *French Beans* are made in pots as required.

Hardy Fruit Garden.—Fruit bushes are being pruned, and if necessary, manure is applied and the ground dug over roughly. To *Raspberry* plants stakes are being applied where necessary; the old wood and the weakest of this year's shoots are cut away. *Espalier* supports, where decayed, are being renewed. The pruning of stone fruits, such as *Apricots*, *Peaches*, *Plums*, &c., has been commenced in some places. *Fig* trees on walls are unnailed and are tied loosely in bundles, so that they may be in readiness for covering on the first indications of severe frost. Fruit trees of all kinds are being planted.

Kitchen Garden.—All vacant ground, as time and convenience permit, is manured, trenched, and laid up into ridges in a rough

state. Some early Peas are being sown on warm south borders. Cabbages are yet planted, and the soil is loosened between the rows of those planted previously. Cauliflowers fit for cutting have a leaf or two broken and laid over the curd, or they are lifted and transplanted in a shed where cold rains or frost cannot reach them. Asparagus tops are being cut over, and the best berries saved for seed; the beds are then slightly forked and carefully mulched with manure. Celery planted late is, being earthed up as required, and litter is held in readiness for protecting the tops. Endive is tied up for blanching, and the sashes are taken off Lettuce beds in favourable weather. When Cauliflower plants have got a good hold of the soil in frames in which they have been transplanted, the sashes are removed. Garlic is being planted in rows a foot apart and six inches asunder in the row, but in damp soil spring planting is preferred for this crop.

NURSERIES.

Indoor Department.—Heaths and other hard-wooded greenhouse plants have been arranged in cool, airy, and light houses, and such plants as required stakes have been supplied with them. Climbing plants are set on back shelves, and both in warm and cool houses are kept moderately moist. Pots containing *Primula cortusoides* are stored under stages, where the plants can be kept dry until started early in spring. Dahlias in pots are also placed under stages and on shelves in sheds; some of the roots are shaken out of the pots and stored in the ordinary way. Young Fuchsias are also stowed away on their sides under stages. Petunias are cut back and placed in a warm pit, in order to induce them to make a start, when the young shoots will be taken for cuttings. Solanums, Polynias, and other sub-tropical plants that had been grown in pots all summer, are placed in intermediate houses, with the view of increasing the stock in spring. Echeverias, Kleinias, and other succulents of which a stock is desired, are increased by inserting the leaves thickly in pans of sandy soil. *Statice spicata*, a pretty annual, is now being pricked off from the seed pan into other pans, or singly in pots; these are plunged in gentle bottom heat for a time and kept near the glass. Young seedlings of *Trachelium caeruleum* are potted off singly in a compost of leaf soil, loam, and sand; they are kept in an intermediate house. Young seedlings of *Cyperus alternifolius* are potted into large 60 and 48-sized pots, in a good rich compost. The plants are kept in warm houses and are well watered. Cuttings of *Gravesia bertalonoides* and plants of a similar character are reputed, as they become sufficiently rooted, in a mixture of peat, sphagnum, and silver sand. Young seedlings of *Anthurium Scherzerianum* are potted in the same material, with an additional portion of sphagnum, in which the pots are afterwards plunged, and kept near the glass in a brisk temperature. Plants of *Piper nigrum* are raised from seed in warm houses, but great care is taken that cockroaches do not get at the seeds, of which they are fond. Seedlings of *Acacia Riceana* are potted off in leaf soil, loam, and sand, and are kept for a time in an intermediate house. Some kinds of *Grevillea* are placed in a close frame or case in the propagating houses, and plunged in bottom heat, to induce them to form young shoots for purposes of propagation. *Aucubas* from seed sown in the end of July and beginning of August are now coming up. The pots containing them are kept in frames or on the floors of cool houses. Cuttings of *Ixoras*, *Gardenias*, *Witsenias*, *Dracenas*, *Crotons*, *Brexias*, *Aralias*, &c., are being inserted in pots under handlights or bell-glasses, and plunged in bottom heat in the propagating pit.

Outdoor Department.—The lifting and packing of deciduous trees and shrubs constitute the bulk of present operations in this department. Young fruit trees are being pruned, as are also Gooseberry bushes. The best of the prunings of the latter are converted into cuttings by dividing them into lengths of 10 inches or a foot, and divesting them of all buds that are on the parts to be inserted in the soil. They are then planted in nursery rows a foot apart and 2 or 3 inches asunder in the row. Magnolias, the finer kinds of Conifers, and other plants in pots are placed in frames or in positions where they can be readily protected in case of severe weather. Choice Alpine plants in pots are likewise placed in frames, the sashes of which are removed on every favourable opportunity. Where room cannot be had for hardy Ferns in pots under cover, they are plunged out of doors in well-sheltered situations.

MARKET GARDENS.

These are now well stocked with vegetable crops, such as Cabbages, Brussels Sprouts, Savoys, Coleworts, Endive, &c. Asparagus "grass" has become quite yellow, but as yet, except for seed purposes, it is not cut down. Fruit trees and bushes are almost leafless, therefore crops under them have a better chance of succeeding than they hitherto have had; indeed since the leaves have begun to fall, late sprouting Broccoli has improved considerably. The Celery crop is excellent, and as yet shows no signs of running to seed. The two

earliest main crops have been finally earthed up, but to the younger ones another earthing must yet be given. Of Endive, both green curled and broad-leaved Batavian kinds are coming in nicely, and are tied up or covered to blanch. The cold, wet weather lately experienced has been considerably against the welfare of late planted Lettuces, but they are now beginning to grow satisfactorily. Where any still remain to be transplanted, they are planted out as ground becomes ready for them. Those sown in frames a fortnight ago are now up. In favourable weather the sashes are completely taken off the frames, and are only replaced in cold weather, or to prevent cold showers. When they are thus put on again they are tilted up a little, so as to keep the plants hardy. A little lime is scattered over the soil in the frames, to prevent the ravages of slugs, but the most destructive enemies which Lettuces have when coming through the ground are, however, birds, which pick them voraciously. The hoe is kept at work amongst those planted out. In some pieces of Onion ground, lately sown broadcast with Spinach, just appearing, Cabbage plants are planted in rows 4 or 5 feet apart, and a foot asunder in the row. Scorzonera roots, which are more in demand than those of Salsafy, are now taken up and laid in thickly in lines, where they remain for a month or two, when they will be in greater demand. Beet is being lifted and stored, also a part of the Carrot crop. Spring sown Parsley is affording a good supply of fresh leaves, and plants for the spring crop are being transplanted. The leaves are being raked off a part of the Rhubarb ground, and the roots lifted for forcing. Seakale roots are also lifted for the same purpose; the long rootlets which are cut off are cut up into finger-length pieces, laid thickly on the surface of a bed, and covered with two or three inches of soil. These form good sets for next spring. Old and worthless Gooseberry bushes are being rooted out and burned, and young ones planted in their places. In planting young ones, two-year-old plants are inserted 4 feet apart to remain permanently, and between every two are other two one-year-old plants, which will be lifted and transplanted elsewhere next year. All refuse of vegetables that decompose readily is carted to the manure heap, and bushes, branches, prunings, &c., stife-burned. Carting manure on to vacant ground, and digging, trenching, and ridging are everyday operations.

The Plough in Market Gardens.—I know not whether Mr. Peter Henderson, who has been enlightening Brother Jonathan on the ignorance of the London market gardeners, is the same who, some five and thirty years ago, entered upon his noviciate in the gardens of the Duke of Devonshire, at Chiswick; but if he is, he must have made bad use of his eyes not to have seen, in the gardens of Cock, of Chiswick; Jeffries, of Sutton; Knivett, of Turnham Green; and scores of others in the valley of the Thames, the plough, at that time frequently, if not constantly, at work; and, therefore, if he thinks he has been treading on John Bull's toes, he may rely upon it he has touched a corn too old and indurated to cause pain. If he thinks our market gardeners have not for, to my knowledge, these last forty years, been tolerably "slick," he is mistaken, for certainly the use of the plough and other cultivators was known at that time. In the autumn of 1851, I was, early one morning, driving some friends from Kent to the Great Exhibition, and passing through Parson's Green, Fulham, a market gardener, with a score or two of men, women, and children, was clearing a two or three acre plot of Onions. No sooner was a portion of the ground cleared than manure was carted on and ploughed in, and when I and my friends were returning in the afternoon, the ground was bristling with a crop of strong Colewort plants, which, in their turn, were cleared and sold within two months. It is this sleight-of-hand cultivation which renders market gardening profitable; the secret of success being to clear the ground directly the crop is ready to lift, and to start another in its place. Gentlemen's gardeners cannot do this—a plot of Cabbage with them stands from fifteen to eighteen months, whereas the market man would take three, if not four, crops in the same time, and care little about the rotation. Where the supply of manure is furnished in the autumn with a sufficiently unsparing hand to promote active fermentation, this kind of cropping can be indulged in, but with a scanty supply of manure and scantier labour, this go-a-head system cannot be attempted. Growers in large centres of population can follow this incessant system of cultivation, and it is well that they can do so, because, in such localities, there is a demand for all they can produce. "The price may be low sometimes," as I have heard the late Mr. John Wilmott, of Isleworth, remark many times, "but there is one comfort, you can't overstock the market." If our transatlantic brethren beat us much in producing vegetables, we are not disposed to grudge them the profit; but if Mr. Henderson thinks he is instructing us when he recommends the plough, he has certainly stumbled upon a "mare's nest" not worth exploring.—W. P. AVRES, Newark.

THE GARDEN.

—o—o—o—
 "This is an art

Which does mend nature : change it rather : but
 THE ART ITSELF IS NATURE."—*Shakespeare.*

THE BRONZE PINE OF THE VATICAN GARDENS.

ON glancing at the view of the Garden of the Vatican on page 387 of this journal, I longed once and again to renew my visit to that lovely and secluded place, and felt that Mr. Noel Humphreys might have devoted an ampler notice of so interesting a spot as the "Giardino Vaticano." Few persons who ramble about Rome during the winter months have the remotest idea of the beautiful object which, hidden from the eye of the casual visitor, nestles in those sacred precincts, viz., the gigantic Pine-cone of Bronze, which originally crowned the apex of the roof of the Mausoleum of Hadrian—now the Papal fortress of St. Angelo. Hearing by mere chance, when in Rome in 1846, of this grand object, I never ceased my efforts to gain admittance to this, the most difficult place of access in the Eternal City, and through the potent influence of a friendly Monsignore and Cardinal Mezzofante, I was eventually admitted. It required some tact to escape the observation of the Holy Father, who was riding on his white mule, habited simply in the ample serge of the Dominican order. I was more than surprised and delighted on finding the cone, which is about 13 feet in height; it was rich in the efflorescence or patina of ancient bronze, a colour, by the way, totally different from anything around it, flower or leaf (there is one exception, viz., the petals of a certain Cape Ixia).

This thyrus or cone—the ancient emblem of mortality—was the most appropriate of all finials to a tomb, the roof descending from it to the circumference of the vast drum, 188 feet in diameter. Its place is now occupied by the noble bronze statue of the Archangel Michael in the act of sheathing his sword—the plague having ceased. My foremost desire was to ascertain whether that chief axiom of fine art, *the aberration from the exact, a principle of beauty in nature*, was adhered to. I rejoice to say it was; for whereas the common-place statuary's style of forming Pine-cones for gateway pedestals is like the Brummagen *engine turning of a watch case*—every part alike—the genius who modelled this paragon of Pine cones was a true observer of nature, and had given the beautiful curve of the central spiculum or axis to which are attached the seed-holding scales; this curve is the charm, the great beauty of a cone. All is thus thrown *out of gear*, so that not two of the blunt ends of the rigid scales are of similar size or form; those on the outer side of the curve are consequently larger than those of the inner. The series of scales run in two directions, one spirally and longitudinally with the axis, the other shorter, taking a transverse course. This master-piece of ornament is really "a thing of beauty—a joy for ever!" It is not, as might naturally be supposed, the Pinus Pinea or Stone Pine of Rome, which is more round and short, but it might fairly claim to be that of the huge Pinus macrocarpa, of which its discoverer, Dr. Coulter, might justly be proud. But this giant cone of Hadrian's tomb is most probably that of Pinus Pinaster, or, perhaps, P. maritima; both so common on the shores of the Mediterranean. I wish we could obtain a cast of this admirable specimen of ancient Roman art; and if sundry geologic savans could partake—within the body of the great Dinornis at the Crystal Palace—of a rump steak and a bottle of port, surely we lovers of Conifers might fairly have the privilege of enjoying, within the cone of this giant of the forest, the delicate, though somewhat resinous flavour of the seeds or "Pignoli"—one only of which, like the Roman oyster, would furnish a hungry man with a liberal meal.

Glen Andred.

E. W. COOKE.

A NEW WAY OF GROWING HYACINTHS.

IN December last, while sitting before a blazing fire in the cozy library at Enderby, I asked myself this question—What can I do for my favourite science this winter? What offering can I bring to my sweet mistress, whose breath is fragrant with the odour of spring flowers, and whose ripe lips are laden with the perfumed juice of the Strawberry and Nectarine?

Ah, distinctly I remember,
 It was in the bleak December!

Cold and blustering without, but warm and comforting within. Books, magazines, and catalogues were lying in profusion on the study-table near me; the dear partner of my life was writing to distant friends, and in my hands was a package of Hyacinth bulbs which I was about to place in the old Pear-shaped glasses that for forty years had been used for the purpose of coaxing these little round balls to open their hearts, and prematurely offer their sweet incense to the Giver of all good.

Painfully aware of the uncertainty of the task before me, and knowing well that oftentimes, with the greatest care and attention, these capricious little beauties will not yield up their treasures before the warm spring sun has invited them to his love feast, I made the inquiry: "Is there not some better way to accomplish this same result—some substance in the great laboratory of nature more closely resembling the soft, warm bosom of the earth than the hard, cold glasses before me?" My fair attendant whispered, "Try wool, cotton, mosses," &c., but to each of these I found objections. The constituent parts of each were not what I wanted. The power of capillary attraction was not sufficiently strong, and for many other reasons they would not answer, and I was about to give it up when suddenly a sprite from old ocean's briny depths appeared, and shouting, "I bring you a sponge," instantly vanished. Springing to my feet with an energy that fairly startled my dear wife, I exclaimed, "Eureka!" The very thing I want; soft, warm, and yielding; power of capillary attraction perfect; porous, admitting freely the fruitful atmosphere through a thousand tiny apertures; a powerful absorbent and evaporator of moisture; and besides all this, an animal substance, and doubtless filled with nitrogenous matters, which, dissolving in the water, will act as fertilizers to the plants, or if they be not there in sufficient quantities, they may be placed in the water with the same result—liquid manure. Good; I will try it. I did try it, and with great success, as hundreds of persons who witnessed the beautiful experiment can testify.

I procured a large, coarse sponge, such as coachmen use in washing carriages, and making a number of incisions about 3 inches deep and 2 long, with a sharp knife, in the top, I inserted the bulbs in the openings, which, in consequence of the elastic nature of the sponge, closed over them, permitting only the points to appear above the surface. They were arranged in two concentric circles around a fine large fellow in the centre, numbering fifteen in all. I then placed the whole thing in the top of a large vase, capable of holding nearly two gallons, and filled the vase by pouring water through the sponge until about one-half of the sponge was below the surface of the water, and the other part above. The water was slightly warmed, so as to produce a bottom heat, so very necessary in striking cuttings and otherwise forcing vegetation; and being kept in a warm room, it was not allowed to become cold. In two or three days the bulbs began to shoot their bright green spires upward, giving promise of success, and in two or three weeks they were 5 or 6 inches high. About this time, in order to hide the unsightly appearance of the sponge, I scattered a few thimbleful of rape seed over the surface, between the bulbs, which sprang up almost immediately, and covered it entirely with a fine moss-like mantle, adding greatly to the beauty of the experiment.

Desiring to extend the knowledge and usefulness of the discovery and the enjoyment of its beauty, I now had it taken to my store in town, where it soon became an object of interest to great numbers of ladies, who watched its progress almost daily, until the bright flowers, more radiant than "Solomon in all his glory," unfolded their shining petals, filling the air with fragrance, and astonishing every one with their unusually

large size and perfect forms. The experiment was pronounced a complete success.

One remarkable feature of the process is, the extraordinary rapidity of the growth. On the 3rd of March I found a box of Tulip bulbs on the top shelf of my little greenhouse, nearly frozen to death, but still striving to shoot out a bright green point to tell us that spring was nigh. I thought I would try them in the sponge. In three days they shot upwards like Mushrooms, and now, in thirteen days from planting, they are 8 and 10 inches high, and showing flower-stalks and buds. For the past two or three days they have grown an inch and a half in twenty-four hours.

Enderby, Baltimore Co., Md.

CHARLES REESE.

[The above interesting experiment, described in that excellent journal the *Albany Cultivator*, well deserves a trial.]

NOTES OF THE WEEK.

— To the many sterling qualities of the new hybrid Clematises must be added that of blooming very late in the season. During the current week we have seen many handsome blossoms of various kinds of Clematis in the open air in gardens round London.

— We have never in England seen an Australian shrub look so well out of doors as *Grevillea rosmarinifolia* now looks in Messrs. Veitch's Coombe Wood Nursery. Specimens of it in the open borders are most vigorous, spread forth their shoots in a peculiarly graceful manner, and bear, notwithstanding the lateness of the season, numerous bright flower buds and some open flowers. In all the milder parts of England it should have a trial.

— THE Mushroom beds in the open air in the market gardens round London are now bearing abundantly. The fact that the Mushroom is grown on dung beds in the open air, and to a large extent, is not sufficiently known to the gardening community. The long beds may now be seen in the fields in the neighbourhood of Earl's Court, Hammersmith, and Fulham, protected by litter and rough mats.

— A LARGE stock of that beautiful white winter flower *Bouvardia Vreelandii* may now be seen in bloom in the Royal Exotic Nursery, Chelsea. The delicate purity of its handsome flowers is sure to make it very popular in bouquets and for indoor winter decorations of all kinds.

— THOSE fond of late autumn flowers might with advantage turn their attention to the hardy Heaths. Though some of these are among the flowers that usher in the spring, we saw quite a parterre of young and vigorous plants with an abundance of bloom on the 11th inst. The largest blooms among them were those of the white variety of St. Dabeoc's Heath (*Menziesia polifolia*), but the smaller blossoms of several kinds of Heath were none the less attractive.

— THE fine collection of Orchids belonging to Mr. Marshall, of Enfield, was sold on the 7th and 8th instant at Stevens'. There were 555 lots, and they realised more than £1,000. *Cattleya Trianae Ruckerii* fetched £7 7s.; *Odontoglossum triumphans Marshallii*, £10 10s.; *Cypripedium grandiflorum*, £8; *Lælia acuminata*, £6; *Masdevallia Veitchii*, £10 10s.; *Angræcum sesquipedale*, £6; *Sobralia macrantha* (Woolley's var.), £12.

— THE most attractive objects in our warm houses at present are the earliest blooming specimens of *Epiphyllum truncatum*. All good plant growers know full well the value of this plant, but the gardening public yet want to be reminded of the great value, as winter flowers, of this plant and its various beautiful varieties. Every stove or intermediate house should be adorned with them during the last weeks of the year.

— It seems to us, says an American paper, that double fruits have been more than usually abundant this year. United Cucumbers are of common occurrence. We saw at Newburgh a plateful of double Plums. Several Apples, apparently two fused into one, have been brought to us. We have not, however, heard of a doubled Pear—save *Pero Hyacinth*.

— A MEETING was held the other day in the Royal Horticultural Gardens, South Kensington, to consider the best means of promoting a representation of British horticulture at the approaching Great Exhibition at Vienna. It was proposed by Mr. Veitch that the leading growers of hardy plants be invited to unite in sending a collection from their various establishments as early in the year as possible, and that later in the season the growers of flowering, fine foliage, and pot plants, as well as of fruits and vegetables, be requested to take part in a similar exhibition.

— *GODWINIA GIGAS* is now pushing up a flower-spike in Mr. Bull's nursery at Chelsea. This huge, and in every way remarkable Aroid, must prove an interesting object in bloom.

— It may not be generally known that there is now an exhibition of *Chrysanthemums* in Victoria Park, in which the plants are arranged somewhat after the fashion of those in the Temple Gardens.

— MANY of our readers will be glad to learn that the Rev. S. Reynolds Holey's story, the "Six of Spades," of which the concluding chapters will shortly be published in *THE GARDEN*, is to be published immediately, in a book form, by Messrs. Blackwood.

— AMONG the few good shrubs now in flower about London, *Daphne "Dauphine"* is worthy of particular mention. Specimens of it in the Coombe Wood Nurseries now bear abundance of fresh blossoms exhaling a delicious odour.

— THE yellow-berried variety of the common *Capsicum* is now a beautiful and effective ornament, seen among such stove plants, &c., as are now in bloom. The handsome drooping fruit of all the varieties of the edible *Capsicum* might, indeed, be used with good effect for this purpose.

— MESSRS. SCHRÖDER & Co., of East India Avenue and Leadenhall Street, announce that they have undertaken the general agency for the Peruvian Government guano. In order to protect the public against adulteration, purchasers are to satisfy the vendors as to their *bonâ fide* dealings with the article, and are required to sign an agreement on the subject before receiving supplies. For lots of not less than thirty tons, the price at present is £13 per ton; but for smaller quantities £14 5s. are charged.

— A GOOD companion to *Veronica Andersonii*, which is frequently to be met with flowering both in the open air and in the cool conservatory at the present time, is *Veronica imperialis*, a closely allied kind. The flowers of this are of a deep red, and produced in short dense spikes. There are several plants of it blooming on the shelves in the Temperate House at Kew.

— THE fine *Dahlia imperialis* is now in good bloom in the Palm House at Kew. The plants, about 10 feet high, are somewhat poor, but they show well the beauty and grace of this queen of composite plants. The plant may be grafted on one of the common *Dahlia*s or grown on its own roots. It is a fine subject for those who have houses large enough in which to grow it.

— THE Rev. Erskine Neale, Vicar of Exning, Suffolk, met his allotment tenants a few days since. They said their "Potato crop had proved a total failure;" but, nevertheless, one and all came cheerfully forward to pay their rent. The vicar returned it to them in full. He said that no abatement seemed to him to meet the severity of the case; and therefore he declined to receive a single shilling of rent—so far at any rate as the Potato patches were concerned.

— THERE is now in blossom in Messrs. Veitch's nursery at Chelsea, a new and valuable variety of *Poinsettia pulcherrima* named major. It differs from the old and well-known plant in being about a fortnight earlier; in having generally more than one whorl of bracts, which give its brilliant crest somewhat the appearance of a double flower, and it also differs in colour, a deep rosy hue spreading over the brilliant bracts.

— BY a circular just received from Mr. Peacock, of Sudbury House, Hammersmith, we learn that that gentleman has 20,000 duplicate Cacti, Agaves, and other succulents to dispose of, and that he generously offers to furnish cases of them containing fifty plants each gratis to ladies and gentlemen interested in bazaars and fancy fairs, such cases to be sold and the proceeds handed over to some charitable institution. Each case will be delivered free in any part of London.

— MR. J. W. PEASE, M.P., and his brothers, considering the wishes of the late Mr. Joseph Pease that the poor people of the northern part of Darlington should be saved the two or three miles walk to the cemetery to attend funerals, have just given to the Darlington Town Council a new cemetery, which the council have accepted. It is computed that, with the necessary building, planting, draining, &c., it will cost Messrs. Pease from £12,000 to £15,000.

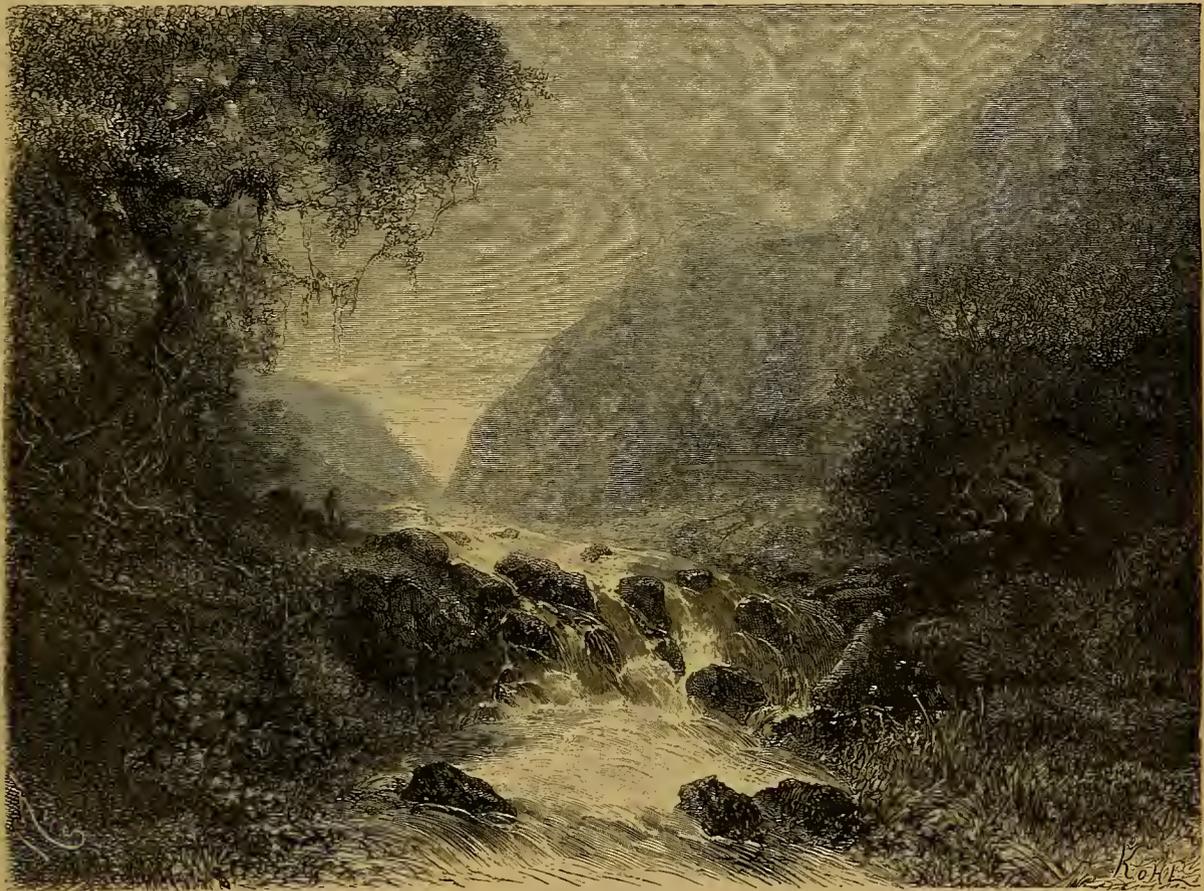
— A FINAL meeting of the Local Committee of the Birmingham Exhibition of the Royal Horticultural Society will take place at the Great Western Hotel, Birmingham, on Thursday next, at one o'clock, to receive the treasurer's balance sheet and dissolve the committee. We learn with gratification that the financial result is most satisfactory, the total profit on the exhibition being about £2,080 (one-third of the receipts), of which half goes to the society and the remainder to Mr. Quilter, who generously divides half his share among the Birmingham charities.

GARDEN DESIGN.

THE VALUE OF A BROOK.

In the formation of a garden landscape the important aid to be derived from a brook, or ever so small a streamlet, is invaluable. Supposing the general surface to fall, in any direction, as it necessarily does in the direction of the brook-course, or else the brook would not flow in that direction, the formation of water effects, either in the form of a lake, a series of rapids, or a cascade, is easily achieved by means of very inexpensive earthworks, or by what may be termed water rockwork, or by both, combined. In the present instance it is sought more especially to show how rocky rapids might be artificially contrived, so as to have all the picturesque effect of natural ones. The whole effect of such a scene as that represented in our engraving might be very closely imitated, in all its most

these landscape features might be simulated successfully, given only as a basis of operations, a slightly undulating surface and a little brook, or the veriest streamlet, however small, provided the supply of water were constant. In the first place the general surface of the soil, and even the bed of the stream, would have to be raised over a certain distance to a dead level, or nearly so, in order subsequently to create the more rapid fall of the stream-bed, so as to cause, if pieces of rock were properly interposed, nearly the precise effect represented in the engraving. If the natural fall of the ground did not in some degree aid the artificial increase of the sought-for declivity, the effect would of course be less striking than if a good and sharp incline could be managed by a moderate raising of the level of both banks and stream-bed towards the back of the picture, as shown in the engraving. But still a very pretty effect might be obtained with a very slight fall, if well managed. Let us suppose that beyond the farthest point



The Brook Cascade.

attractive features. The continuous fall, the grand effect of the interrupting rocks, looking black in the midst of the white foam of the struggling waters; the roaring sound of the contention of the two conflicting elements; the soft mist rising from the beaten, yeasty foam; and at certain hours of the day, when the sun is shining, even the display of the prismatic colours of the rainbow in the spray, which imparts such fascination to some of the grander cascades both of the English, and of the French and Spanish Alps, might all be realised by artificial means, supposing the desired brook, or even the smallest streamlet, to be available.

The annexed engraving represents a highly picturesque scene, in which mountain-like hills, and a small but raging torrent form the principal features; with a grand old tree on the left, overrun by a profuse-growing climber, whose festoonings hang picturesquely from the branches. Let us see how

of the stream, as shown in our illustration, a small lake has been created, in order to form the nucleus of some other part of our home landscape only to be seen from another point of view. Then we should have the earth excavated for the formation of the lakelet ready to hand for raising the brook and its banks for a length of 50 or 60 yards, so as to create a sharp declivity farther on. This being effected, and before the stream is admitted into the new channel, the artificially sloping bed should be partially filled with as good and picturesquely formed masses of stone as can be procured within a reasonable distance. This will require a good deal of artistic taste, and some little mechanical skill, as the placing of the rocks must be managed with a pre-conceived idea of the manner in which the water would effect its passage among them; the greater and more effectual the opposition planned to impede its course the greater and more picturesque would be the effect of the ensuing

contention between rock and water. The bed being kept shallow and narrow, in comparison to the breadth of the lakelet above, and the body of water coming to the shallows being great, in comparison to the width and depth of its new and rapidly sloping channel, would give it great force in its descent; and an effect very similar to that represented in the illustration might be thus effected by very simple means and at very moderate cost.

H. N. H.

PRICE ON THE PICTURESQUE.

If we follow the history of landscape gardening, we must study Repton, Gilpin, Loudon, and several other authors, and grow puzzled with all the principles set forth by them. How much seems to clash with the teaching of modern lovers of landscape beauty, the teaching of Mr. Ruskin for instance! One author strove as earnestly as Mr. Ruskin after true art, but never seems to have come to any fixed principles. This was Sir Uvedale Price. "What is the picturesque?" he asks, "What is beauty?" "What is ugliness?" No thoroughly definite answers are arrived at in the course of his essay, but whether his delightful book is practical, or whether it only shows up the mistakes of those who came before him, it can never lose its charm for the general reader. The good old Welshman loved Nature with a faithful fervency of which it is delightful to read, and which makes itself clearly felt through all his arguments, quotations, and considerations. In the edition edited by Sir Thomas Dick Lauder, a thick volume is made up with a great deal that is uninteresting in the way of notes, but for thirteen pleasant chapters Price discourses on "the picturesque."

In ordinary life we talk very easily of what is picturesque in nature and of a picturesque bit of building in a sketch, but it would be difficult to many of us exactly to define what we mean or what is the right sense in which to use the word. Price begins by observing that until the art of landscape gardening came into fashion, parks and extensive grounds were left in "picturesque neglect;" that is to say, Nature did as she pleased therewith. "Are the present styles of embellishment then really *improving*," he asks; "are they founded on any just principles of taste?" The "landscape painter" is as much in Price's mind as the "landscape gardener." The two should be combined, he tells us. The man with a good eye for a sketch would see and avoid the "white spots and black spots—the naked water, the naked buildings, the scattered, unconnected groups of trees." Price seems to think that the happy combination has not been found yet, but that pictures should be studied with reference to landscape gardening, and the advice of artists taken. The enthusiastic sketcher would retain the pretty old cottage, but would counsel the grouping of trees and their kinds and colours, without due reference to position and soil. Price is always full of thought for the painter when he sees what he calls a "dressed lane" all smooth banks and neat palings. He sighs to think of the pain which it will give to the artistic soul who may view it. But get Price himself into the real old lane that he loves and pages must be read before you can get him out again. It must be a hollow lane full of "picturesque accidents." Then he loves to linger over a neglected pollard, to notice the strange knots and protuberances on the rugged, twisted trunk, the mosses, the yellow touch-wood, the mellow lights, the deep peculiar shades; or he gives the picture of a young Birch, "whose tender bark and light foliage appear still more delicate and airy when seen sideways against the rough bark and massive head of the Oak—sometimes it rises alone from the bank, sometimes from amid a cluster of rich Hollies or wild Junipers, sometimes its light and upright stem is embraced by the projecting Cedar-like honghs of the Yew." Then he begins to extol the shaggy roots on the banks, the hollows, and luxuriant vegetation, "wild Roses, Honeysuckles, Periwinkles, and other trailing plants;" and he notices how these pendant trails and flowers are thrown into relief by the shade of the recesses in the bank over which they hang. Then comes a sad account of how part of the lovely wild lane is dressed. He, moreover, apologises for being so long in the lanes, and bids us notice old quarries and gravel-pits as well as "the sublime," as displayed in forests, mountains, and rocks.

The autumn season is much beloved by Price, on account of its rich tints and the mellowness of its distant views; he does not like the spring fruit blossoms, which he thinks look discordant in a landscape. The midsummer shoot he much admires, "the old foliage forms a dark background, on which the new appears, relieved and detached in all its freshness and brilliancy—it is spring engrafted upon summer." In the tenth chapter is an account of Kent, the famous landscape gardener (born 1685), and his style is described in order to introduce "capability Brown," who obtained his nickname, as is doubtless well known, because it was his habit on first viewing the prospect destined to be improved, to remark, "This place has great capabilities." Much amusing criticism is expended upon Brown, in reference to whose works in the way of serpentine walks, belts, and rivers, the author finally declares "they wear one's soul out!" Kent's great principles were perspective and light and shade. He loved groups of trees, meandering streams, and deep shadows. He loved Nature and strove to follow her, but it will never be forgotten that to do this more perfectly, as he thought, he planted dead trees in Kensington Gardens while engaged in laying out those grounds. However Kent may have striven to copy nature, Price does not consider that he succeeded; the Elizabethan or Jacobean terraces, avenues, and vistas only became formal serpentine walks, clumps, and circular roads.

Then came Brown, bred a gardener, and very well, says Price, as far as laying out flower beds were concerned, but having no eye for landscape. He was very popular, however, and universally consulted. He laid out the grounds of Bleuheim, with which Price finds a good many faults. Nevertheless, he had numerous followers who, like himself, made serpentine pieces of artificial water with naked banks. All places seemed "cast in one mould," as if made by contract in London and brought down and put together in the country. Price sighs over the formal clumps of trees, which, says he, are placed like beacons on the summits of hills and alarm the traveller in search of the picturesque while yet many miles off. Brown himself criticises the tastes of his predecessors in the art, and a particular kind of path is spoken of by him as that kind called a zig-zag. "You may," he says, "have one foot upon zig and the other upon zag." It is his artificial water that seems, above all things, to annoy Price, the serpentine form with flat, bare banks. "Fill one of his roads with water," he says, "and it will become as perfect as one of his lakes; dry up his lake and it becomes a road."

Price could not bear white-wash. He speaks of "a cottage of quiet colour, half concealed among trees, with its bit of garden, its pales, and orchard, as being one of the most tranquil and soothing of all rural objects; when the sun strikes upon it, a number of lively picturesque circumstances are brought into view, which render it most cheerful; but if cleared round and whitened, its modest retired character is gone, and is succeeded by a perpetual glare." "An object of sober tint gilded by the sun is like a serious countenance suddenly lighted up by a smile."

Through this essay and an appendix, through essays on artificial water and other subjects, Price's book helps to teach us to love nature and to try to learn her ways, and to remember that in landscape gardening, as says the motto of THE GARDEN,

The Art itself is Nature.

M. A. D.

It is not growing like a tree
In bulk, doth make men better be,
Or standing long an oak, three hundred year,
To fall a log at last, dry, bald, and sere:
A Lily of a day
Is fairer far in May,
Although it fall and die that night—
It was the plant and flower of light.
In small proportions we just beauties see;
And in short measures life may perfect be.
—Ben Jonson.

Not Exactly.—A contemporary assures us that "An experienced chemist states that the manufacture of wine is so reduced to a science that grapes are gradually being dispensed with." Beg his pardon! A chemist should be exact in his definitions, and "wine" is "a liquor produced from the juice of the Grape." The Grape may be "dispensed" for, by dispensing chemists, in the manufacture of a phisic slightly resembling wine in taste, but it can never be dispensed with, in "wine."
—Fun.

THE INDOOR GARDEN.

GESNERA REFULGENS.

This is a fine plant for flowering in winter, and it is very attractive even when out of flower, its leaf markings being very beautiful. It is easily grown, but it is of little use attempting its cultivation unless it can receive a nice growing temperature during the winter. Pot the dry bulbs singly in March in small pots, using half loam and peat, with a little leaf-mould, and sufficient sand to secure porosity; give a little, but not too much water, until the young shoot appears above the soil, or the bulbs are liable to rot. By the end of May the pots should be well filled with roots; repot then into 6 or 8-inch pots, and replace them in the stove, where they will not be shaded too much by other plants. Ordinary stove treatment, as to heat, moisture, and shade, is all they require.



Gesnera refulgens.

About the middle of July shift the strongest plants into 10 or 12-inch pots, replacing them in the stove. Towards autumn expose them to all the light possible, and keep the atmosphere a little drier than heretofore, in order to induce them to flower freely. When the flower spikes are pushing, and when the flowers are expanded, see that they do not get much wet by means of the syringe, or they will be liable to damp off. During the growing season they will be benefited by being slightly syringed, when the house is closed in the afternoon; it induces growth, and keeps in check red spider, to which Gesneras are liable if the atmosphere is too dry.

T. BAINES.

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Gasteria Peacockii.—This fine form of this genus has triangular deeply channelled leaves, with margins irregularly toothed and interspersed with white spots; it is a strong grower, the leaves being 18 inches long. It is a hybrid raised by M. Pfersdorff, of Paris, by whom it was named. It was awarded a first-class certificate the other day at South Kensington.

The Purple Bugle as an Indoor Ornament.—The purple-leaved variety of the common *Ajuga reptans* is very useful for indoor decoration in winter and spring. Runners of it may be taken off outdoor plants in autumn, potted, and kept in a cold frame. When required for blooming, they may be taken into the stove or forcing house, and kept near the glass, where they will soon produce good spikes of bloom. The flowers come up cleaner and finer than they do out-of-doors, which, taken in connection with the fact that they may be had during any of the winter months, makes them much more desirable than they otherwise would be. Instead of runners, however, I prefer old well-established crowns, as they produce the strongest flower-spikes. No sooner have they flowered than they begin to grow amazingly; when, if increased stock is required, the runners will be found to root most readily; indeed, if only laid on the surface of a light sandy compost and kept moist, they root at once. The rapidity with which this plant may be increased out-of-doors, however, does not necessitate indoor attention in this direction. As soon, therefore, as the plants have done blooming indoors, they may be either thrown away or planted out in the open ground.—W. F.

BUD VARIATION!

UNDER ordinary circumstances all the buds on any particular plant are in all material points alike, and the shoots resulting from those buds are also alike. There are differences in size and vigour and what not, for no two are precisely alike; still, for general purposes, we may say that all the buds and all the shoots from those buds are alike. To such an extent is this true, that it is the general practice amongst gardeners to propagate, by means of cuttings or grafts, any particular variety they may be desirous of perpetuating, because reproduction by seed does not offer the same certainty as propagation by buds does, of reproducing the particular quality required. But it now and then happens that one or more buds on a particular plant, and one or more shoots, are not like the rest, and then we have what in garden phraseology is called a "sport," but which is more correctly styled a bud-variation. The simplest case of bud variation because it involves no appreciable change of form, is that in which a single bud, or a collection of buds in one particular part of a plant, is more precocious in its development than the others on the same tree. Instances of this kind are not uncommon. The buds on one particular branch may be each year considerably in advance in point of development of their neighbours, and this without their being any appreciable reason, such as more perfect protection or shelter on one side than on another. Thus, we have seen two shoots of red Currants taken from the same branch: on the one spray the flowers were ten days earlier in point of expansion, the new shoots being as much as 6 inches in length, while on the other spray the buds were only just expanding. With reference to this point, it may be remarked that the same phenomenon occurs in the case of seedling varieties. There are certain Horse Chestnuts—some of which have almost historical fame, such as the *Marronnier du Vingt-Mars* in the Tuileries Gardens—which are year by year several days in advance of their kind in their development. But the circumstance of the old organism exhibiting this precocity, is not so striking as is the early development of one particular branch, or set of branches, as compared with the rest. In point of size, whether increased or diminished, there is often great difference in the different branches of the same tree. For some reason or other—what, no one knows—the shoots on a particular branch, instead of lengthening as the rest do, remain stunted and dwarfed. Several curious garden varieties of Firs, such as the *Clanbrasilian Fir*, have originated in this way, and are reproduced or propagated by cuttings or grafts at the will of the gardener. The Birch affords frequently illustrations of this phenomenon, in the form of those tufted agglomerations of contracted shoots so strikingly resembling birds' nests. A similar occurrence is not uncommon in the wild Cherry; and Mr. Webster, of Gordon Castle, asserts that he has observed similar growths in the common Laburnum, in the *Wych Elm*, and in the *Scotch Fir*. Sometimes the determining cause may be discovered in the shape of an insect or fungus; but in this case the unusual condition ceases with the destruction of the impeding cause, whatever it may be, and the condition cannot then be perpetuated by the art of the gardener. In the case of the dwarf Firs, the leading shoots sometimes revert to the normal and more vigorous condition. Variation in the colour of certain leaves or flowers is an equally common occurrence, and is perhaps more easily understood. Each individual cell, to a large extent, lives independently of its neighbours, and the secretions it forms and deposits are very often different from those of adjoining cells. Colouring materials, especially fluid ones, are notoriously liable to be formed in isolated cells. Again, variations in colour so often depend on the mere superposition of cells containing material of different tints, that the changes met with, though striking to the eye, do not seem to indicate so complete a change as in the case of alterations of form or size. Very many of the variegated *Pelargoniums*, so fashionable now-a-days, have originated as "sports" from some previously existing variety. The intrinsic change between some of these varieties, even where apparently very considerable differences exist, is, in some instances, very slight. A marked difference in the amount and quality of the pubescence is not unfrequently manifested in some of these cases of bud variation. A plant which ordinarily has its leaves and its younger branches invested with a coating of hairs (epidermal appendages), all on a sudden produces a shoot on which the leaves are destitute of such clothing, or *vice versa*. Some of the Moss Roses have originated from plain-leaved varieties in the manner just indicated. But of all these cases the most striking are those which involve a change of form. We see, for instance, not unfrequently, a particular branch bearing leaves very different from those on the rest of the tree, so different that, but for their production on one and the same tree, the observer might readily take them to belong to different species. Many trees now cultivated for ornamental purposes have originated in this manner, such as the cut-leaved Beech, the Oak-leaved Laburnum, and very many more, commonly to be found in plantations. Very

often the whole "habit" or aspect of the tree is altered by these variations: thus many of the so-called "weeping trees" have sprung from a solitary branch of a tree which presented a pendulous character. Some trees, it may be remarked, naturally produce leaves of very different forms: especially notable in this respect is the Euphrate Poplar (*Populus euphratica*), supposed with reason to be the Willow mentioned in the Psalms. Occasionally the variation is confined to one half of the leaves. A remarkable instance of this kind has been noted by A. Braun in a species of *Irina*, where one half of the leaf was undivided, the other deeply gashed into narrow segments. The history of these variations is pretty much the same in all cases. All on a sudden a tree, which heretofore has produced shoots and leaves of the usual character, emits shoots with leaves of a totally different form. If they be such as the cultivator thinks likely to serve his purpose, he takes care to propagate them by means of grafts or cuttings. Sometimes variations of this character may be reproduced by seed; but there is little certainty as to this. The same kind of variation occurs in the case of flowers and fruits. Every now and then, for instance, two Roses of different forms and colours will be met with on the same stalk, such as a white Moss Rose in association with a pink one of a different form and destitute of mossy appendages. Reference has often been made to some of these cases and to the famous *Cytisus Adami*—a *Laburnum* bearing yellow and purple flowers, as well as leaves of different character. What is a rare occurrence in the Rose, and is only known in one or two species of *Laburnum*, is comparatively common in the *Chrysanthemum*. There are, indeed, particular varieties of this favourite autumn flower, which are specially liable to produce flowers of different characters on the same branch. Generally speaking, but by no means always, the change is confined to the colour of the flower only, and colour, as we have seen, is proverbially fickle in flowers. Among commonly cultivated plants Azaleas and Camellias are peculiarly liable to "sport." In the former plants, indeed, one may often witness much variation in the shape and colour of individual blossoms, and very frequently parti-coloured flowers, and others intermediate between extreme forms. In the case of fruit similar variations occur—Peaches and Nectarines on the same bough; black and white Grapes in the same bunch—indeed, sometimes the two colours in the same berry; Gooseberries of different kinds on the same bush; Pears, Apples, or Cherries, of different shapes, colour, and flavour, on the same bough. All these are, though of course rare, yet familiar occurrences to those on the look-out for such phenomena. It is necessary in some of these cases to investigate closely, to see whether or no grafting of different sorts on one stock has not taken place. No doubt some of these cases, recorded by lovers of the marvellous, were simple cases of adhesion or inoculation; but, allowing for these, there still remains a large number which cannot be explained by any such process.

As to the alleged causes of these phenomena, it must first of all be premised that these bud variations are not necessarily to be considered as malformations. Their organisation is often perfect; they are not distorted, they are simply variations; and next, they occur not exclusively in plants that have been long subjected to cultivation, but also in wild plants. Now, plants that have been long in cultivation have for the most part been hybridised or "crossed" over and over again. Thus, in the case of the *Pelargonium*, it is supposed that all the immense number of different kinds now in cultivation have originated from two or three species. These have been hybridised or crossed, their offspring has been crossed in the same way, and so in the *Pelargonium* of the present day we have a plant which has, so to speak, a great deal of very confusedly mixed blood in it. Bud variation is often only a reversion—a harking back—to the character possessed by the parent; it is the result, as the phrase goes, of a dissociation of hybrid character, the consequences of a sort of filtration by which the constituent elements become separated from their previous admixture. This reversion may be proximate, just as you see in a family of children that, whilst most of them resemble both parents, some are like the one or the other, while some again present little likeness to either parent, but reproduce the lineaments of some remote ancestor. A singular illustration of this phenomenon was brought under the writer's notice by Mr. Wills, and in which two plants of *Pelargonium* showed the characters of three separate ancestors; the exact lineage of one was not fully known, but the history of the other was definitely recorded. The plant in question presented, after the fifth generation by seed (and not till then), various branches bearing leaves undistinguishable from those of the varieties known as "Unique," "Beauty of Oulton," and "Italia Unita"—three very distinct varieties, each of which were known to have been at some time or other ancestors of the plant in question, either as furnishing pollen or as the seed-parent. Another plant of mixed origin, after retaining its character for three years, suddenly produced branches, some of which had

leaves of the form and colouration of those of "Beauty of Oulton," the original seed-parent, while the remainder were bedecked with leaves in all respects similar to those of "Lncy Grieve," the ancestral pollen or male parent. The two varieties in question are widely different. In the cases just alluded to, there was not a mere change of colour—an affair of comparatively minor importance—but there was a change of configuration and substance. Other cases of a similar nature have been recorded by various observers, amongst others by Mr. Grieve, the raiser of the popular "Mrs. Pollock" *Pelargonium*. Of course any plant produced from seed requiring for its development the contact of the pollen tube with the ovule or germinal vesicle, must be held to have mixed characters, and more markedly so in the case of unisexual flowers, either monocious or dioceous. From this point of view a case lately recorded by Mr. Meehan becomes very significant. That gentleman relates that he obtained cuttings from *Cuphea leiantha*, a dioceous plant, producing its male and female flowers on different individuals. It is not stated whether the cuttings were taken from a male or female plant, but it is stated that some of these cuttings produced male, others female, plants, and yet all were taken from a plant of one sex only. So, too, it is well known that certain unisexual trees will in some seasons produce male flowers only, in other seasons female flowers only, and *vice versa*. But dissociation of mixed characters will not account for all the cases of bud variation. Very often we have no evidence at all of previous hybridisation, or crossing; or, even when such has existed, the form produced is not like that of either of the supposed progenitors. Such cases as the Fern-leaved Beech do not seem explicable by either hypothesis. The Sugar-cane, which rarely if ever flowers, and hence offers no opportunity for hybridisation, nevertheless produces new varieties by means of bud variation. Potato tubers, again, vary greatly often on the same plant, but these may be the result of former crossing. A case related by Mr. Meehan, in the Sweet Potato (*Convolvulus Batatas*), is, however, not open to this objection. The plant in question, it appears, never flowers in the Northern States of America, and yet it has been known to produce tubers of two distinct varieties—the "Red Bermuda" and the "White Brazilian"—on the same root.

Reversion to an ancestral condition is a still more hypothetical cause than dissociation of mixed characters, as we have scarcely ever any means of knowing what the assumed condition was. We have, therefore, to look to other causes. We shall not advance matters much by attributing the changes in question to an innate tendency to vary possessed by buds as well as by seedling plants, which are, in so many respects, analogous with buds. Doubtless there is such a tendency, but we want to get at the "why and wherefore" of the proclivity. The following illustrations may in some slight degree furnish a clue to the attainment of the desired end. In the first place we must not overlook the circumstance that, under ordinary conditions, the several organs of plants often vary according to the part of the plant upon which they grow. Botanists recognise this when they give different names to the root-leaves, stem-leaves, floral-leaves, bracts, &c. Again, there are such cases as the seedless *Barberry*. This plant can be propagated by cuttings, and its seedless condition can be thus perpetuated; but if the plant be multiplied by suckers, or shoots thrown up from the underground stem, the fruits produced have seeds as usual. This is an evidence of a difference in the internal organisation of different parts of the same plant. Another illustration of a similar character lately came under observation, in which a sucker from the root of the *Ailantus* produced egg-shaped leaves and a dense cluster of flowers while only a foot or so in height, the ordinary habit of the tree being to grow for several years before flowering, to form a lofty stem, and to produce large compound pinnate leaves, like those of the common Ash. This, in gardening phrase, would be a "sport," but it is clear it had nothing to do with hybridisation, the form produced being unlike that of any other allied plant. Moreover, there is no evidence to render the occurrence of hybridisation in this particular case at all probable.

We can only attribute it to a difference in the organising force manifested in certain parts of the plant as contrasted with others. Of a similar character are the observations made by practical gardeners as to the difficulty, and in some cases impossibility, of perpetuating a variegated condition of the leaves by dividing the root; plants so produced having green leaves. A French nurseryman (M. Lemoine) notes this in the case of variegated *Pelargoniums*, and in certain forms of *Symphytum* and *Phlox*, and his experience tallies with that of English cultivators. Again, in the common practice of budding Roses, if the bud be taken from a long, rampant "gross" shoot, with a great tendency to form leaves and little tendency to produce flowers, the bud, transferred to its new home, will reproduce the undesirable characters of the parent shoot; hence the care requisite in budding to take buds from the short-jointed flower-bearing shoots.

—M. T. M., in *Popular Science Review*.

THE ARBORETUM.

HARDY TREES AND SHRUBS.

BY GEORGE GORDON, A.L.S.

THE MONTPELIER MAPLE (*ACER MONSPESSULANUM*).

THIS Maple when old forms a dense round-headed tree, with the principal branches forked, the secondary ones full of ramifications, and the stem covered with a reddish-brown bark, but when young the branches have rather an ascending tendency, and are less branching. It is a native of France, Spain, Italy, and Greece, where it is found in exposed, stony places, and in the South of Europe, particularly in Italy, it is much used for hedges, on account of the persistency of its leaves during the greater part of the winter. The Montpellier Maple, which was introduced in 1739, is perfectly hardy, thrives well in any common soil, and is easily increased either by means of seeds or layers. It is well suited for planting either in large or small places on account of its neat appearance. The leaves are cordate, three-lobed, quite entire on the edges, leathery in texture, dark glossy green above, and set on slender footstalks frequently an inch or more in length; in mild seasons the foliage is retained on the trees until very late in the year. The lobes of the leaves are equal in size, quite entire on the margins, of an oval shape, and with the exception of a little tomentum in the axils of the principal veins on the under side, they are quite smooth on both surfaces. The flowers are pale yellow, and are produced in profusion just before the leaves unfold in May. They are on long, slender, forked peduncles, and disposed in loose, pendulous panicles or corymbs of from six to ten flowers each. The fruits or keys are small and quite smooth, with



Leaf and Fruit natural size.

the wings parallel, and on slender footstalks, sometimes an inch and a half in length. The synonyms are *Acer trilobum* and *trilobatum*. There is a variety of this kind (*Acer monspessulanum polymorphum*), which has the leaves five-lobed or three-lobed, and sometimes bluntly toothed on the edges, and with the flowers in many-flowered nodding corymbs.

A CITY LILAC.

It may be interesting to learn that a Lilac tree lived and thrived in the very heart of London for thirty years. It grew in a small back yard, a few feet square, belonging to a house in West Smithfield. When first planted the tree was seven years old, and thus was sufficiently established to take a good firm hold of the ground. The back yard was surrounded by a brick wall about 12 feet high; planted near one side of it, the Lilac tree soon reached the top. In spite of the smoke and soot of all the neighbouring chimneys, the tree succeeded. The sun did not reach the roots; only the uppermost branches received the benefit of its warmth on a summer's afternoon. No attention was given to pruning or thinning, yet it was seldom without some bunches of flowers at the proper season, and one year it was loaded with bloom. The first young leaves, fresh and green, in spring, and the bunches of Lilac were a sight to gladden the heart of a Londoner. The mould in which this tree grew and prospered was so wet and rich that nothing could be made to grow in it but this tree. Geraniums, even esculents, and various other things were planted at the foot of the trunk from time to time, but the high wall and shade of the Lilac branches did not suit them, and they would

not grow. In its thirtieth and last year the tree had grown about double the height of the wall.

The house was demolished to make way for city improvements; consequently the tree is not now standing on the same spot. It was, no doubt, transplanted. B.

Shrubby Willows.—Of these many are worthy of a place in our ornamental gardens. *Salix pentandra*, *Salix lucida*, and one or two others have such a close resemblance to a Laurel, as to be frequently mistaken for varieties of that plant. Others again have very dark corrugated foliage, seldom reaching more than 7 to 10 feet in height, and are of a close compact form, with very little of that straggling habit found in ordinary Willows. We have also many dwarf varieties of extremely slow growth, one or two of them not rising over 6 or 7 inches in as many years, with others that creep along the ground like fine threads, admirably adapted to plant on rockwork, and all these dwarf or shrubby varieties produce the well-known Palm, which in the case of some of them, as *Salix lanata*, will remain for several weeks without much apparent change, blooming in early spring, when flowers of any kind are a great consideration.—W. SCALING.

Pruning Conifers.—Almost all kinds of Conifers suffer from cutting, especially the common Spruce Fir. I have had trees die in consequence. Will you kindly inform me what is the best mode of stopping the bleeding after pruning this description of tree?—A. G., *Malvern Wells*. [Mr. M'Nab, Royal Botanic Gardens, Edinburgh, to whom the above has been submitted, says:—"I have never seen any Conifer injured by judicious pruning, that is, when pruning is absolutely required, and done at a proper season, viz., between the middle of September and the middle of November, depending much on the state of the season and the way in which the pruning is accomplished. In all cases I prefer the cut points being sloped, cutting outwards and upwards, so as not to expose the cut surface to the sun or frost. During a dry summer, the cutting or foreshortening can be done at a much earlier period than during one like the present, when all Conifers requiring pruning here were done during October. Your correspondent cannot have seen the extensive ranges of Spruce Fir hedges along the roadside in several parts of Perthshire, or he would not have stated that Spruce Firs suffer from pruning. These hedges are cut every autumn, and look as well and quite as compact as a hedge of Yew.]

NOTES AND QUESTIONS ON TREES AND SHRUBS.

The Chinquapin (*Castanea pumila*).—Can any of your readers tell me if this very small species of Chestnut, common in some parts of North America, is in cultivation, and, if so, how it behaves? It is much spoken of in America as a dwarf edible Chestnut.—W. W. L.

Large Rosemary.—I saw a plant of Rosemary the other day nailed against the gable end of a two-storied cottage, which measured 15 feet in height. Only having seen the plant as a bush, and not more than 4 feet high, I thought the fact might be worthy of a short note in THE GARDEN.—FLOS.

Tree Labels.—We sometimes see the "date of introduction" and other useless particulars on labels. One that should never be omitted on a tree label is the year of planting of the specimen. This I observe is regularly done by Mr. Cox at Madresfield Court. After the name of the tree this is the most essential point to indicate.—W.

The Timber Resources of Michigan.—I have not the least hesitation in asserting, says a correspondent of an American paper, that there are still standing in the forests of Michigan over forty billion feet in merchantable Pine. But such is now the mill capacity of Michigan, and the determination to work it, that in the present year one-eighth will be consumed of all the Pine standing in the beginning of 1872, and the same fate will prevail in 1873, and so on. Thus the Pine forest will be swept away in eight years, even if the woodman's axe is not aided by the destroying flame.

Trees in British Columbia.—The Douglas Pine, together with the white Pine, and a valuable description of Cedar, covers every mountain of the Cascade range, as well as the valleys, with a rich growth. The trees alike abound in the fertile bottom-lands and on the most sterile and precipitous crags. In many places in the interior—Lillouett Lake, for instance—the Pines seem to grow out of the perpendicular granite without a particle of visible soil to nourish them, their trunks appearing to be implanted in the rock and built round with solid masonry. Of course, the quality of the timber differs in various localities, but its abundance is a matter of astonishment to new comers.

Gardening Recreation for Lunatics.—When Archbishop Whately was engaged one day in his gardening operations, a companion referred, among other matters, to the great revolution in the medical treatment of lunatics, introduced by Pinel, who, instead of the straight-waistcoat and other maddening gads, awarded to each patient healthful and agreeable occupation, including agriculture and gardening. "I think gardening would be a dangerous indulgence for lunatics," observed Dr. Whately. "How so?" said his friend, surprised.—"Because they might grow *Madder*," was the rejoinder.

THE SIX OF SPADES.

CHAPTER XXIII.

Mr. Grundy's Song.

INTRODUCING to readers horticultural a song, which has no connection with horticulture, I can only plead that it has been oft applauded by members of our floral brotherhood, and that I am anxious to preserve, among "things which the world would not willingly let die," a peculiar order of vocal music, long prevalent in our rural districts, but now almost superseded by the melodies of Mr. Christy and other composers. The ballads to which I refer were chanted, in the time of my boyhood, at harvest suppers and other festal meetings of our farm-labourers, and were of a tragic character. They were recited and received with great solemnity, however supernatural the incidents, however homely the diction might be. The articulation was slow, the eyes of the vocalist were fixed upon the ceiling, and the sealing-waxed end of a clay-pipe rested lightly on his chin, save when at the words, "Chorus, gentlemen," it was removed a while; to serve as a conductor's baton. In this style and spirit dear old Joe Grundy sang—sang as if he were in the Albert Hall instead of in a tiny chamber; and though the performance was a trial to some of us, who did not quite believe, as he did, every word of his startling story, and had grievous wrestlings, in consequence, with terrible temptations to laugh, it never failed to elicit the liveliest approbation from us all.

The tune is old and familiar; but, as I know not the name, I herewith transcribe the notes of it:—

MR. GRUNDY'S SONG—"SAIREY JANE JONES."



Mes-tur Chairmun, Vice Chairmun, an' Gentle-mun hall, I

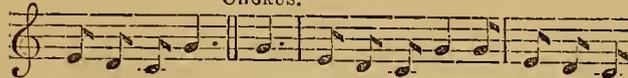


suppose I mun sing, as you've made this here call. So without no



paldavvers nor rho-dy-den-drade,* I'll sing the sad lot of a

CHORUS.



bew-ti-ful maid. Ho Cleavers and Bones, Ho, Sairey Jane



Jones, Luv he's a rum un, as all on uz howns.

Sammel Cox was a butcher, young, gay, and genteel,
With an ansun blew coat, a white hapun, and steel—
He'd a sweet little cart, and no hos end trot quicker;
But, truth for to tell, Sam was parshul to lick.

Ho, cleavers and bones, &c.

Now these here is the fax 'ow Sam Cox cum to grief,
'E went hup to the 'all with some mutting and beef,—
And there 'e first saw, with 'er smile so bewitchin',
Miss Sairey Jane Jones, the new cook in the kitchin.

Ho, cleavers and bones, &c.

'Is 'art was a-blazin' with luv's burnin' fire,
And with tender hemotions did Sammel perspire;
And says 'e to 'imself, Sairey Jane, my young friend,
Your days as a spinster they draws to a heud.

Ho, cleavers and bones, &c.

* I asked Mr. Grundy the meaning of these words, and his reply was, that he "reckoned they were poetry, and was put in for garnish." The author, I need hardly state, had palaver and redomontade in his mind.

For days, and for weeks, and for months 'e did try
To win that fair cook with 'is tongue and 'is hi—
And at last she did promise next Sunday she'd take
A walk with Sam Cox in the wood by the lake.

Ho, cleavers and bones, &c.

They walked on its banks, and they talked 'mong its trees,
Till the stars they lit hup like so many fu-zees,—
But when Sammel says, Sairey luv, will you be mine?
No, says she, Butcher Cox, hi must hask to decline.

Ho, cleavers and bones, &c.

Hi'm fond on yer, Cox, but did long since hengage
My 'art to a butler, I'd know'd from a page.
Next month we shall wed—ah! them words 'ow they bust 'im,
And that butler, oh mi,—'ow 'e innudly cust 'im!

Ho, cleavers and bones, &c.

But he swallered 'is roth, and preserved 'is demeneer,
And 'e looked like a lamb, though 'e felt a ihener—
And says 'e, Then next Sunday night I will bring 'ere
A nicst wedding present—a luv sweeneyer.

Ho, cleavers and bones, &c.

'E went 'orac wite with ate, and to comfit 'is 'art
'E drank of neat gin somethink under a q'art;
And that night did resolve that next Sunday e'd make
A hend of Miss Jones in the wood by the lake.

Ho, cleavers and bones, &c.

They met, and the present 'e brought for poor Jane
Was a knife, which 'e put to 'er jugyleer vein;
And then with a fury, hi no'er erd the loikes.

'E throwed fair Miss Jones to the chubs and the poikes.

Ho, cleavers and bones, &c.

'E sailed off next morning to Ha-meri-ka,
But a storm met the ship ere she'd got arf 'er way;
The waves they did foam, and the lightnings did fly,
And a thunderbolt 'it Sammel Cox in the hi.

Ho, cleavers and bones, &c.

S. Cox hupon this lost 'is presence o' mind,
And likewise 'is legs, for a nowlin gret wuid
Blow'd 'im bang overboard, and the sailors hagree
As a shark nipped 'im hup, when 'e got to the sea.

Ho, scrunching 'is bones, havenging Miss Jones, &c.

MORAL.

Young ladies hengaged with gay butchers don't dally,
Or praps you may meet this sad fate of Miss Sally;
And gentlemen hall from the gin-bottle fly,
Hor a thunderbolt's sure to 'it you in the hi.

Ho, cleavers and bones, &c.

S. R. H.

LAW NOTES.

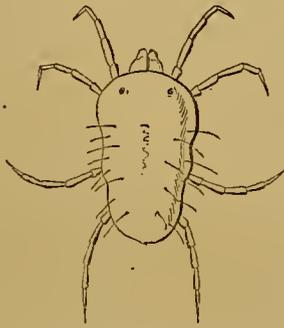
THE CARRIAGE OF FRUIT BY RAILWAY COMPANIES.

At the last court at Haslingden, Mr. Barnes, a fruiterer at Rawtenstall sued the Lancashire and Yorkshire Railway Company for £23 2s. 10d., being alleged losses sustained through the defendant's negligence in the conveyance of goods. Plaintiff's case was that in summer-time the Company ran a special train for the conveyance of fruit, known as the fruit train. It ran from Manchester to all parts of East Lancashire, and started at an early hour in the morning. On the 16th of July the plaintiff delivered goods to defendants at Manchester, to go by that train. They ought to have arrived in Rawtenstall at 8.20 a.m., but as they did not arrive until six o'clock the same night plaintiff refused to accept them, and claimed for value of goods and for loss of market. The Company's defence was that there was no special contract, that the goods were not of such a perishable nature as plaintiff alleged, and that the Company had given notice a week previously that goods would not be carted to the 7.20, and that they would be at the consignee's risk. It was not proved, however, that plaintiff got such notice, and as the notices about the train were never pulled off the boards at the station, his Honour decided against the Company on that point, and in favour of the plaintiff for 15s., for goods which had been lost by the Company, but he reserved his decision on the issue raised by the plaintiff that he had a right to refuse to accept the goods, and to claim the cost price and damages for loss of market. He had since tendered it in writing to the registrar. He observes that there is only one case which seems to bear upon the point raised—viz., "Sevene v. Great Western Railway," 18 L. T., N. S. 295; but in this case the plaintiff, who had consigned goods for two days in succession, went to the station to see if they had arrived, and as he was leaving the place on the third day he said he should treat them as lost goods, and claim accordingly; and the court held he was right. In the present case (observes his Honour) there was no pretence for considering the goods lost, nor was there any express contract that the goods, if they failed in carriage, should be treated as lost.

GARDEN DESTROYERS.

ACARUS TILLÆ.

DURING the past season we received a few leaves of a Lime tree from Longleat, swarming with a minute yellowish or slightly orange-coloured species of acarus, which Mr. Berry, who sent them, told us had nearly denuded two Lime trees of their foliage, and he also noted that the stems and branches seemed covered with a bright glaze. On examination we found that the Acari belonged to a species noticed, but scarcely described, by Boisduval, under the name of *Acarus Tillæ*. It is very minute and visible to the naked eye only as a tiny speck. It is very similar to the red spider in form, but a trifle smaller, more elliptical, slightly broadest in front, and pale whitish yellow instead of reddish. Like it, it is opaque and velvety, and in some individuals there may be seen at times, when gorged with the juices of the leaf, a slight indication of greenish, like a more or less elongated streak in the middle of the back, shining through its integuments. The figure below is a magnified representation of it. The bright glaze which Mr. Berry mentions was, we presume, due to a slight web of silk with which the insects cover the under-sides of the leaves, and which forms a kind of brilliant surface. They move about on this web with a good deal of quickness, wandering here and there apparently without any determinate purpose. They do not gnaw or eat away the leaves. Like the green-fly, which in mode of life and of feeding somewhat resembles them, they merely suck the juice of the leaf; but although almost microscopic in size they make up



The Lime Tree Acarus.

for their minuteness by their numbers, and under their attacks the leaves rapidly shrivel up and die. They chiefly congregate on the under-side of the leaf, those found on the upper side being mere wanderers, while on the under-side they are sometimes crowded together in vast numbers; for example, on some of the leaves sent us by Mr. Berry they were so thick that the leaves looked as if they were not merely sprinkled with a yellow orange-coloured powder, but this was actually in parts heaped up on them, so that none of the green colour of the leaf was visible. Their appearance in such excessive numbers is said to follow certain peculiar states of the atmosphere. Their habit of living under the leaf renders it very difficult to get at them so as to destroy them. A syringe with a long nozzle, recurved at the tip, has been suggested as a means of destroying them by applying deluges of tobacco water or other liquid panacea, but when once established their number, fertility, and consequent rapidity of increase are so great that it has little effect; in fact we may candidly confess that no remedy, as far as we are aware, has yet been found.

Other acari (and in particular one which is also often found in great numbers, and has been supposed to injure fruit trees, viz., *Oribates geniculatum*, a dark brown shining little globule about the size of a small pin's head) feed upon this and some other species; for it is a peculiar circumstance regarding acari that the usual adaptation of structure to kind of food seems to be absent. Closely allied species, with identically the same structure, as far as we are able to make out, are some of them carnivorous and others of them phytophagous. But the anomaly is only apparent. Carnivorous mammals are

provided with a different apparatus for obtaining their food from that of vegetable feeders; not on account of the difference in the chemical constituents of their food, but on account of the different form in which it is presented to them for extrication and assimilation. If, for example, the food of both was presented to them in a liquid state, in the one case blood, and in the other juice of plants, we may be sure that the carnivorous canines in the one case, and the vegetarian molars in the other, would be alike dispensed with, and both would be furnished with a sucking-up or pumping apparatus which would be identical, if no speciality in the mode in which the liquid presented itself called for a difference. There might be a difference in the structure of their viscera, adapted to the chemical character of the liquid food, but the external and oral structure would be the same in both. This is what we find in all suctorial insects—bugs, gnats, acari, &c. All are provided with a similar sucking apparatus, which some use upon animals and others upon plants. It has been even said that some, as the bed-bug, feed upon the juice of plants and blood of animals indifferently, and the impossibility of immense swarms of mosquitoes ever tasting food at all in the perfect state, if they are restricted to the blood of mammals, has been adduced as an argument in support of this view. It is to be remembered, however, that many insects, especially those whose life is brief, need little or no food in the perfect state, and this may be the case with some of the blood-suckers. A. M.

Do Galls of Willows ever overhang Water?—In a letter lately received from Mr. Cameron, jun., of Glasgow, the writer asks: "Have you noticed that the galls on Willows overhanging rivers are only on the leaves above the land, very few, if any, being on the leaves over the water?" The gall referred to is produced by *Nematulus Vallisneri*. I certainly have seldom, if ever, seen the galls on boughs overhanging water. Baron von Osten Sacken has recorded the same thing of the American *Plum weevil*, which, according to him, avoids trees overhanging water when depositing its eggs. The question of ovipositing insects thus avoiding trees in positions which may be dangerous to their brood has some practical bearing where the conservation of foliage or fruit crops is of importance. I have myself witnessed that certain water-beetles, namely, *Dytiscus marginalis* and several species of *Colymbetes*, have dropped down on hot-house frames protected by glass. They made this mistake by taking the glass to be their native element: theirs was an error of sight. Assuming that insects injurious to fruit trees often discern their positions by sight, it seems worth while to offer the suggestion that the means which attracted the water-beetles might possibly be made use of for keeping away such insects as avoid water, and which might possibly be scared away by any object simulating that element.—A. MULLER, in *Newman's Entomologist*. [Plenty of the above galls may be seen on the young Willows growing along the Thames, which are surrounded by water at every tide.]

THE FLOWER GARDEN.

HARDY HEATHS.

ALTHOUGH beds and belts of Heather may by some be looked upon as tame and ineffective, compared with the gaudy display of scarlet flowering and variegated foliaged Geraniums, different coloured masses of Verbenas, dwarf Dahlias, and other favourites of the "ribbon" gardener, yet alongside of them, even in the short-lived period of their greatest brilliancy, many of the Heaths will stand in favourable comparison. And although, individually, Heaths may not bloom so long as "zonals," yet, collectively, they may by judicious intermixture be continued throughout a much longer period; the earlier sorts displaying their floral beauties among the snows of retiring winter and advancing spring, while the latest flowering kinds often hang out their lovely drooping bells till the ending of the year, and even longer. Nor are the plants devoid of beauty when their thick floral coverings have faded and fallen, for then they appear as the finest foliaged of evergreen under-shrubs, while, at the same time, they are sufficiently varied in their growth, structure, and shades of colouring, to fit them for many different places and purposes.

The proper place for a "Heather Garden" is not that where it will come within the same range of view as the ordinary flower garden, nor where in winter it too often becomes converted

into beds of barrenness; but it will appear to greatest advantage in some quiet, sunny, exposed situation, where its inmates can be seen, examined, and admired at leisure. Nor is it at all necessary that it should be occupied by the true Heathers only; their near allies should also be freely introduced, associating plants of unobtrusive growth and elegant, or at least pretty, appearance. We include, as belonging to the true Heaths or "heathers," all those which have held place in the popular genus *Erica*, although some botanists may have seen cause to separate and remove them into other genera, such as *Calluna*, *Gypsocallis*, *Dabœcia*, and eighteen others, which last are almost exclusively made up of tender species and need not be further noticed here. Earliest among the hardy Heaths we have the *Gypsocallis carnea* of modern, and the *Erica herbacea* of preceding botanists, in its two varieties, distinct in their habit and shade of colour. How desirable that the native mountain haunts of this lovely "Moor Heath" in Switzerland and Southern Germany were searched on the first withdrawals of their snowy carpeting for a really pure white-flowered variety. Such a name as *E. carnea alba* does sometimes appear in nursery catalogues, but we have invariably found it to be wrongly applied to the white-flowering Irish form of *G. (E.) mediterranea*, which handsome species, next in succession in blooming, is represented on the hills of Connemara by at least six distinctly habitated or coloured forms, all more dwarf in their growth than the veritable original species from the shores of "The Great Sea." Flowering along with these last, and extending into June and July, are the tree Heathers of Southern Europe, *E. arborea*, *E. australis*, *E. polytrichifolia*, and their varieties, of which a white-flowered one has as yet no place in our gardens. These, if not perfectly hardy, often grow and thrive for many successive years in our climate, occasionally attaining a height of 6 to 10 feet, till, if unprotected, they are cut down by a winter of unusual severity, when the temperature falls to about 10° Fabr. They all form grand centres for Heather clumps, as well as fine lawn specimens, and well reward the trouble of carefully defending them from intense frosts. Of our native "Bell-heathers," the earliest in bloom is the badge of Clan Macallister—*E. cinerea*, a universal favourite for its fine, dwarf, compact growth, and abundantly-produced flowers of many shades between its normal crimsoned purple and pure white. These different coloured varieties are particularly suited for dry banks, outer margins of clumps, and walk edgings. Shortly after those of the last appear the larger and paler coloured bells of the "Carlin" or "Range Heather," badge of Clan Macdonald, the free growth of which is indicative of inferior, damp, peaty soils. It thrives, however, under cultivation in ordinary dry ground, and all its varieties, from light crimson to pure white, are favourites in small bouquets, and may be gathered from July to October. Blooming along with the last, and in some of its varieties flowering till the end of autumn, is "the Heather" *par excellence*—*Calluna (Erica) vulgaris*, badge of Clan Macdonell, and surpassing all the others in the number and distinct characteristics of its varieties, varying widely as these do in their colours and periods of flowering, size, and habit of growth. Their foliage is smooth or downy, variegated or green of different shades, and at least one of them has double flowers. Some are of dwarf moss-like and almost flowerless habit, others prostrate or trailing; some upright or fastigiate, and others wide-spreading and vigorous in growth. The downy-leaved varieties in cultivation are the white and the red flowered; but from the abundance in which they are found in Morayshire, Banffshire, and in the upper parts of Aberdeenshire and elsewhere, careful search in these localities would doubtless result in the discovery of as many shades of colour and habits of growth in the downy as there are in the smooth-leaved varieties. The double-flowered was many years since found in Cornwall, and has more recently been discovered pretty abundantly about Invercauld. Careful research in these parts might secure other colours of it; and by proper management, seedlings, widely different in colours and growth, might also be obtained. Of all the Heathers, none are nearly so important for clumps, lines, or edgings in the "Heather Garden," as the numerous varieties of *C. vulgaris*; and we would only further remark, that in using them for walk edgings, as the soil employed is almost invariably softer than that in the surrounding ground, it should be so thickly interspersed with lumps of stone as to prevent moles running in it, or they will injure if not destroy the plants. *E. vagans* and its varieties are all highly serviceable for late summer and autumn blooming; whilst latest of all comes "The Irish Heath" (*Dabœcia polifolia*) red and white, *D. p. globosa*, red, white, and striped, with other varieties, which, although flowering in June, extend their occasional blooming far into and even throughout mild winters. Although not giving here a full list of hardy Heaths, it would be unpardonable to omit the pretty *E. ciliaris*, of which it is surprising that only one variety should yet be known in our gardens.

Near allies to the true Heaths comprise those hardy Ericaceæ, with

narrow Heath-like or not very broad foliage, such as *Andromeda*, *Cassiope*, *Menziesia*, *Bryanthus*, *Pernettya*, and a few of the *Vacciniæ* and others. This selection might be extended, so as to include those broad-foliaged members of the family which have Heath-like flowers; but this would be verging within the precincts of the Ericaceous garden—a more appropriate name than the old one of "American garden," since its most conspicuous features are now derived from other parts of the globe; the term "Heather Garden" being applied in a much more restricted meaning, so as to embrace only the Heath-like members of the natural order Ericaceæ; but it could have no better nor more appropriate surroundings than the species and innumerable splendid varieties of the co-genera, *Rhododendron*, *Azalea*, *Arbutus*, *Kalmia*, *Lyonia*, and others.

HARDY YUCCAS.

The *Yucca* has been cultivated in English gardens for more than 250 years, and it still has no rival among hardy plants in its own peculiar habit and style of growth. Though the stiffest of all our hardy plants (so stiff, indeed, that it is now admirably imitated in cast-iron), it yet has a grace and elegance peculiarly its own; and this elegance shows itself under all conditions, provided only that the plant is not cramped for room. It seems equally fitted to stand alone on a lawn, or in the centre of a bed, or in numbers grouped with other plants, or forming a bed by themselves. They look especially well on rockwork in any part, either at the bottom, the sides, or the top. They are not very particular about soil, growing in good rich mould, in stiff clay, or any well drained soil; but I do not think they do so well in sand or chalk, and I should certainly not plant them in peat. They are, however, so easily satisfied, that I should not be surprised to hear of their doing well even in sand, chalk, or peat. Their complete hardiness is another great recommendation; all of those which I shall presently mention are so hardy that it is almost impossible to kill them. The suckers are apt to die down to the ground when first planted, if they have not been very carefully taken from the parent plant; but if left alone, they will in a few months renew their growth.

Without entering into any botanical description of the species, I will mention those that are best fitted for culture as hardy plants. The whole genus has been carefully worked out by Mr. J. G. Baker, but somehow the nomenclature cannot be considered as quite settled.

1. *Y. aloifolia*.—This I find the least hardy, but in places where it does well it is a most desirable species, rising to the height of 8 or 10 feet. It can be known at once by its serrated edge. There are beautiful variegated forms of this plant well known in greenhouses, and, curiously enough, I find the variegated more hardy than the typical plant. With the simple protection of a band over the top of the plant, to keep out rain and snow, it stands the winters well, and makes a very striking plant in the borders. 2. *Y. gloriosa*.—This is the largest of all, and there are many varieties of it. It flowers generally when five or six years old. 3. *Y. concava*.—An old but scarce kind, well worth growing among the low forms, from its very concave leaves. 4. *Y. filamentosa*.—Another of the low forms. A well-grown plant is a fine object, but it is very seldom seen, and is, perhaps, more capricious about soil than the other species. There is a beautiful variegated form of it, but I fancy it is hard to grow, as I have more than once had it and lost it. 5. *Y. flaccida*.—This is a variety of the last, and the comest of all the low forms, and, perhaps, the most desirable. It forms itself into clumps, and a good clump may be expected to have three or four flowering stems every year. 6. *Y. glaucescens*.—A stiff, narrow-leaved, very low form, not very common, and not very free flowering, but well worth growing. 7. *Y. angustifolia*.—The smallest of all, very scarce, but a good plant for rockwork. Its leaves are very narrow, with a white margin. It looks more like a *Dracena* than a *Yucca*. There are old plants of it at Chelsea and Oxford. 8. *Y. superba*.—Very like *gloriosa*, but smaller; the flowers, however, are much more beautiful, and, indeed, were pronounced by Dean Herbert to be "unquestionably the most magnificent in their way in the flower-garden." (See Bot. Reg., 1690). 9. *Y. recurva*.—Perhaps the most graceful of all in its manner of growth, very common and



A GROUP OF YUCCAS IN MR. ELLACOMBE'S GARDEN AT BITTON.

very easily increased. Any person wishing to have a *distinct* collection of *Yuccas* would find the above nine suit his purpose, though there are still several other species, all more or less desirable. Among the minor advantages of *Yuccas* I would mention that the dead flower-stems make capital supports for delicate creepers.

H. N. ELLACOMBE.

Hardy Bamboos.—Your interesting remarks on the various kinds of Bamboo, in a late number of THE GARDEN, prompt me to call the attention of your readers to the fact of the wonderfully hardy nature of the Bamboo, and its power of withstanding the severest frosts through many winters. As a proof of this I would instance a fine plant twenty years old in the garden of a gentleman resident in Delgany, County Wicklow. The clusters contain hundreds of stems, measuring, at 2½ feet from the ground, 16 feet in circumference. The shoots have now attained a height of 19 feet, and their plume-like aspect, when gently waving in the breeze, is both beautiful and novel. The situation is in an open grassy hollow near a running stream. The stems (or rods) are each about half an inch in diameter and of great hardness.—“CUTTLE,” *Monkstown*.

PUBLIC GARDENS.

THE NATIONAL HERBARIUM.

You will, perhaps, give admission to a few remarks on Dr. Hooker's instructive “Reply”* to my “Statement” of 16th May, 1872, bearing in mind that this “Statement” was called for in explanation of the grounds of my requirements and assignment of space in the Museum of Natural History, to be built at South Kensington, for the reception, uses, and applications of the National Herbarium, on the conviction that such would be continued and maintained in the metropolis. Dr. Hooker had put in the van of his evidence,† and recommendations bearing on the reduction,‡ limited applications,§ and subordination to Kew,|| of the Herbarium at the British Museum as regards supply,¶ nomenclature, and government, a summary of the amount of botanical work represented by the 140 volumes having the herbarium at Kew as their cause or condition. Seeing that—were this summary to be held as decisive, administratively, for carrying out his urgent desires—a Government impressed with its responsibilities for the application of public money would place on retiring allowances the proportion of the staff no longer needed in the metropolitan herbarium—there was a motive in addition to my duty in response to the inquiry of the First Commissioner of Works, to sift the grounds of Dr. Hooker's attack on the department of botany in the British Museum. The anxieties of its officers were too well founded. The argument from the amount of herbarium work at Kew since the practice of transferring there the dried plants collected in Government expeditions would be valid if such work could not be done elsewhere, or if such work had not been done in the metropolitan herbarium prior to the diversion thereof of its legitimate supplies. But the “*Prodromus Floræ Novæ Hollandiæ*,” the “*Observations Systematical and Geographical on the Herbarium collected in the Vicinity of the Congo*,” not to cite other works of Robert Brown, well known to botanists—and I may add the “*Plantæ Javanicæ Rariores*” of his successor, John Joseph Bennett, F.R.S.—are examples of “scientific work” at the London Herbarium, in relation to its legitimate supplies, which will bear comparison with the “scientific work which is turned out from the Herbarium at Kew.”

The circumstance which, in the emergency threatening a Department of Natural History in the British Museum I was bound to submit to the consideration of Government, was that the works added to Botanical Science, for which before its supplies were intercepted by a “competing establishment,” the National Herbarium in London furnished the materials for publication, were works of assigned duty. The officers of such Herbarium had no trusts or responsibilities in relation to the Royal Gardens, but gave their aid in naming the living plants at Kew; leaving the officers in charge of those gardens free for the works and applications for which a nation provides and supports its collections of living plants. Had Robert Brown been the director of such establishment, those who had the inestimable pleasure and benefit of his intimacy know that his devotion to the experimental and physiological duties of his office would

* See THE GARDEN, p. 385.

† Minutes of Evidence of Royal Commission on Scientific Instruction.

‡ Ans. to Q. 6,683.

§ Ans. to Q. 6,684 and 6,685.

|| *Ibid.*

¶ Ans. to Q. 6,785, “That the British Museum Herbarium and that at Kew should be under one control, and the former be continuously added to from Kew.” In his Ans. to Q. 6,732, Dr. H. says—“The trouble of supplying the South Kensington Museum would be very trifling,”—which I think probable.

have been the prime and paramount subject of his time and labours at Kew. Permit me to exemplify my argument. In the “Report of the Royal Garden at Calcutta for 1870” (No. 585, 14th May, 1872) it is stated:—“At the beginning of the year the total stock of *Ipecacuanha* amounted to five plants in Sikkim and seven in this garden. These represented the only surviving offspring of a single plant received from Dr. Hooker, of the Royal Gardens, Kew, in 1866.—At the request of the Right Hon. the Secretary of State for India, attention has for some years past been given in Edinburgh to the propagation of *Ipecacuanha* plants for this country, and during the past year the supplies raised there began to arrive. Five ‘Wardian Cases’ containing about 100 plants were received from Dr. Balfour of the Royal Botanical Gardens at Edinburgh.” The Curator of these gardens, Mr. McNab, referring to the earlier introduction of living plants of *Cephaelis Ipecacuanha* into the Kew Gardens, and alluding to the slow and difficult method of its propagation by the adopted methods of cuttings, proceeds to describe the better method to which his experiments on living specimens led.* “The roots or rather rhizomes of the *Cephaelis* are peculiarly annulated. A few of them were taken from one of the plants in the Royal Botanic Garden during the month of August, 1869, and, after being cut into transverse sections of different lengths, were inserted in a horizontal position over the surface of a pot prepared with drainage and white sand. This pot was placed under a hand-glass in a warm propagating bed, and kept moist. A few weeks afterwards the root-cuttings began to swell, and showed signs of budding, chiefly on the upper cut surface. In most cases, indeed in nearly all, only one bud was developed, but in some instances two or more were produced. When several growing plants are observed the root can be cut through so as to form independent plants.” If this has not before found a place in the columns of *Nature* it may be deemed worthy of one, for, as the physiological botanist in charge of the Edinburgh Gardens observes—“Understanding that the Government intend to introduce the cultivation of this plant in India,” and “in order to meet the demand which in all likelihood will be made on nurserymen for plants of *Cephaelis*, it is well to know how it can be propagated independently of cuttings” (*Ib.* p. 318.) To give another instance. In an obituary notice of Dr. Fred. Welwitsch, the editor of a horticultural journal refers to the species of a plant which bears his name as follows:—“The *Welwitschia mirabilis* is about as remarkable a plant as the *Rafflesia Arnoldi* itself, and equally uncultivable.”† The simple fact is, the ill success at Kew. One cannot be sure till Edinburgh has had its chance. As a popular premier once defined dirt, so a weed is a plant multiplying in a wrong place. We may hope for a reversion of the sentence on *Welwitschia* when “cones with ripe seeds” and “fine young plants” have found their way to a botanic garden whose officers are not diverted from experimental work, not trammelled and obstructed by that wasteful weed—an overgrown herbarium. The native conditions of existence of the *Tumboa* may then and there be imitated so truly, with ample provision for the descent of the tap-root, as to enable visitors to see the plant alive, and Mr. McNab may even succeed in giving other horticulturists the opportunity of multiplying specimens. From such instances—and they might be multiplied—of legitimate successes, where a botanic garden is content to use the herbarium in the contiguous metropolis, and has not the low ambition of setting up a competing one in the garden itself, I infer an administrative advantage in maintaining the division of labour, which worked well in the days when the Government collections of live plants went to Kew, and those of dead plants to London.

I do not merely suggest, but affirm, that the nation loses part, perhaps much, of the benefit of the liberal grants and aids it affords to its garden of living plants through the uncalled-for and unnecessary accumulations there of collections of dead plants and the resulting herbarium work. Dr. Hooker evades the concluding argument of my statement, takes a personal standpoint, assumes the tone of an injured individual, and deems it unfitting to notice what he is pleased to call an “insinuation.” He who is most sensitive as to himself is often least mindful of the feelings of others. If Dr. Hooker will read his answer to Q. 6,661 (*op. cit.*, p. 434), he may, at least ought to, have some sense of the pain he inflicted on fellow-servants of the State and collaborators in science, on men at least his equals, and one of whom, in a recondite botanical problem, has shown himself his superior. Statements of a certain character may be made by one careless as to cost in few words and at small loss of time. It required the evidence occupying pp. 530, 531, of the published “Minutes” of the Scientific Commission to show the groundlessness of the insinuation conveyed in the answer to Q. 6,661.

I will not now trespass further on your valuable space. But the

* McNab “On the Propagation of the *Ipecacuanha* plant,” *Transactions of the Botanical Society of Edinburgh*, vol. x. p. 318.

† THE GARDEN, Oct. 26, 1872.

"Kew Question" has assumed proportions, and may have consequences, meriting for it a thorough ventilation; and I permit myself to believe that you may not be unwilling to receive further remarks on those points in my "Statement" to which Dr. Hooker has condescended to reply.

RICHARD OWEN, in *Nature*.

Sheen Lodge, Oct. 30.

THE GARDEN IN THE HOUSE.

THE VARIEGATED IVY-LEAVED PELARGONIUM.

AMONGST the numerous plants now in use for the ornamentation of hanging baskets, for draping vases, or for training loosely up conservatory pillars, few surpass the Ivy-leaved Pelargonium. The green and the bronze leaved varieties are also suitable for use in this way, but the variegated varieties are the most attractive. In addition to their graceful habit of growth, they possess the great advantage of almost entire immunity from the attacks of insects. This is a great desideratum, more especially in the case of plants that are suspended over others; as in this position, if infested with insects, they quickly communicate them to all plants that grow below them. They are also plants of easy culture, and strike freely in sand and loam in small pots. Ordinary loam, to which has been added a little well rotted manure and sand, suits them perfectly. They require little



Variegated Ivy-leaved Pelargonium.

attention, beyond stopping, in order to induce them to break sufficiently to afford the proper amount of shoots, to give them a well-furnished appearance. An 8 or 10 inch pot will be found large enough for them, and if for large hanging baskets, two or three plants may be put together, or they may be mixed in this way with other plants suitable for this description of decoration. The old plants may be cut back and induced to break afresh, or young ones may be struck and the old ones thrown away, when the baskets or vases are refilled.

T. BAINES.

CULTURE OF PLANTS IN ROOMS.

(Continued from p. 388.)

THE FORCING OF FLOWERS IN ROOMS.

PLANTS cultivated in rooms may be divided into ornamental foliage-plants and flowering plants. The former have an especial value, both because they adorn the room all the year round with the refreshing green or varied hues of their leaves, and by their distinct habit form an agreeable contrast with other plants. Flowering plants, on the other hand, are chiefly valued for their handsome or abundant bloom, and when they unite ornamental foliage with beautiful flowers are doubly prized. The greater number of them bloom in spring, summer, and autumn. Only a few of the plants which can be permanently grown in rooms will bloom without special culture from December to March, a season when every flower

has a far higher value. Of these the following are perhaps the best (for a warm room):—*Olea fragrans*, *Pancreatum speciosum*, *Eucharis grandiflora* and *E. amazonica*, *Clivia nobilis* and *C. miniata*, *Bouvardia leiantha*, *Epiphyllum Altensteinii*, *Cestrum aurantiacum*, *Habrothamnus aurantiacus* and *H. elegans*, *Camellias*. For a room protected from frost or for a double window:—*Cyclameu persicum* and *C. coum*, *Azalea indica*, *Camellias*, perpetual *Roses*, *Primula prænites*, several *Ericas* and *Epacrises*, *Jasminum nudiflorum*, *Daphne Cneorum*, *D. indica*, *Viburnum Tiuus*, *Rhododendrou ponticum*, *R. catawbiense*, *R. campanulatum*, *R. arboreum* and *R. dahuricum*. But in addition to these few plants, which under ordinary culture will bloom in rooms through the winter, many others may be forced to bloom in winter whose natural time of flowering is from April to June. While the winter-blooming plants all come from warmer climates, where they blossom naturally at the same time that they do in our rooms, those plants whose blooming time can be artificially changed from April and May to December are natives of the middle, and some of them of the northern parts, of Europe, where, after a long winter sleep, the flowering season rapidly succeeds the commencement of vegetation.

The common winter-blooming plants succeed under the same care which is bestowed on other room plants, only they should have the brightest and sunniest position that can be given to them. Such plants, however, do not properly come within the sphere of this chapter, which is more particularly devoted to those kinds which only by special treatment can be brought to bloom from December to the end of March. These we shall divide into groups according to the different modes of treatment which they require, and shall give full directions for their management.

As general rules for all these groups, we shall observe that every kind of flower forcing involves a change of the natural seasons, and that the plants intended for forcing should have previously made their growth, finished their period of rest, and formed their flower buds, if success is expected to follow. The stronger the previous growth of the plant, and the better it has been furnished with flower-buds during the period of rest, the better will be the result when it is forced, as all that is accomplished by forcing is to bring into earlier development, by means of a higher temperature, flower-buds which have been already formed. The successful forcing of flowers in rooms therefore depends very much on the previous preparation of the plants which are to be forced. This preparation involves the completion both of previous growth and of a full period of rest, and it is a well-known fact that the greatest attention in forcing will not be followed by satisfactory results with plants which have not fulfilled both these conditions. We shall take for an illustration one of the commonest plants used for forcing—the *Hyacinth*. Strong bulbs of these, suitable for forcing, can only be raised in the open ground when the position and soil are favourable. The millions which are annually forced in Europe are mostly raised in Holland. When the summer happens to be so unfavourable that the bulbs do not become fully ripened, they always produce a much more scanty bloom when forced. It will also frequently happen that some bulbs make only a feeble show of flowers, while others, which are forced at a later period, bloom abundantly. The reason of this is that the former were forced before the flower-buds had been fully developed.

Lastly, it is well known that *Hyacinth* bulbs which have been already forced may, under proper management, be forced a second time the following winter, and will even bloom earlier than newly-received bulbs, but the flowers are never so fine or so abundant as they were when first forced. The cause of this earlier bloom is, that such bulbs complete their period of rest sooner than bulbs grown in the open ground, and the less abundant bloom is owing to the fact that the stock of nutriment laid up in the bulb has been, in a great degree, exhausted by the previous forcing, and, in pot-culture, is not so easily replaced as in the open ground.

In commencing forcing, the plants may be placed in a room which is just above freezing point. In this low temperature the sap will merely begin to flow and usher in the new growth. The development of bloom will not commence until the temperature is raised either by removing the plants

into a warmer room or by artificially heating the room in which they already are. When the amateur possesses a number of bulbs, we recommend that when the buds begin to swell, only some of them should be transferred into a warm room at first, leaving the rest to follow at an interval of from eight to fourteen days. The great advantage of doing so is that, when the first lot has gone out of bloom, there are others to follow, the flowers of which will also be finer the later they are brought into the warm room.—*E. Regel.*

(To be continued.)

THE FRUIT GARDEN.

THE VINE IN THE OPEN AIR.

(Continued from p. 403.)

PROTECTION.

OUT-OF-DOOR Grapes need protecting from two kinds of danger, viz., the weather, and insects and birds. Spring frosts often work sad havoc among Grapes, and various expedients have been adopted for preventing the mischief, such as wall copings and screens of various sorts for Grapes on walls, ground cordons, espaliers, and bushes or standards. Even in France the practice of protecting the early shoots and blossoms of Grapes in the open air is common. The Grape walls are furnished with copings from 10 to 14 inches wide, with frames of wood, canvas, or mats extending 2 feet or so more. This overlapping saves the Vines from all ordinary frosts. I have seen fine walls safely cropped for years by simply having them built so as to lean over about six inches beyond the perpendicular. Temporary frames or mats are likewise suspended over Vines in the open air. I suspect some such means were common in the olden times in England, for we read of tents having been erected in the vineyards. A few spare boughs laid over cordon Grapes or placed around standards suffice to keep out or throw off frost, and thus save the crop. It is almost more difficult to protect ripe Grapes from wasps, flies, and birds than frost. They must be bagged or netted; but the usual plan of having a separate bag of muslin or canvas for each bunch is the worst of all modes of protection, for the wasps eat them through, and once in they defy detection. Thus it often happens when one goes to cut a fine bunch of Grapes the fruit is gone, and the bag converted into a nest of wasps and flies. Neither are bees much better. At times they take a fancy to fruit and devour it about as rapidly as wasps do. The best mode is to cover part of a wall or a whole cordon or plantation of standard Vines in the lump with cheese cloth or wire netting. The latter is the best and cheapest in the end. Of course, if wasp and fly proof, then the fruit will also be safe from birds. Other insects, such as woodlice, earwigs, and lady-birds, are sometimes also trying. But a clean vineyard ought to furnish no harbour for these, and there are various well-known measures of trapping and destroying them. Traps, such as bottles charged with beer, hand-lights baited well with damaged fruit, should be used to thin both flies and wasps; and all the wasps in the spring and nests throughout the season ought to be sought after and destroyed.

FOSTERING OF THE FRUIT.

Under this general term I would include all special culture, such as sprinklings overhead on the evenings of hot days, watering the surface of the soil, to create and sustain a genial atmosphere around the fruit, assisting the roots with manure water during the two periods of active swelling, selecting and displaying to the best advantage those leaves that were closest to the bunches, and preventing them from being overshadowed by other leaves. Any variety that furnishes finer berries than was anticipated might likewise have a second thinning during the period of the second swelling. All these minute attentions would have a great and cumulative result in fostering the size and developing the quality of the fruit.

RIPENING OF THE FRUIT.

We can do little to help and, fortunately, as little to hinder this out of doors. Under glass our aids to ripening often prove a hindrance. After the Grapes begin to colour—and white Grapes colour, though not to the same extent as black—no more water should be given. Could the whole of the rain be carried off from that stage, the Grapes would probably finish better, the flesh would be firmer, and there would be less juice in the Grape, and that of higher quality than when exposed to wet. This is one of the reasons why Vines in the open air finish better on sloping ground than on a level surface. Consolidated by a season's exposure to wet, the autumnal rains, that

mostly fall heavily, rush off the surface before they have time to penetrate to the roots. This and the additional heat concentrated on the slope, help the fruit to ripen more perfectly. In the case of choice Vines it would be well to throw the late rains off by slates, sheets of zinc or iron, a few wooden slabs, a surfacing of concrete, or a few square feet of felt. Of course, on a large scale, this would be impracticable, neither is it necessary for common Grapes; but where one or more Vines are grown for dessert, these helps to perfect maturity would prove as practicable as they are useful. If the borders have been mulched throughout the season, the mulching may now be removed and the surface raked down smoothly. Such a surface will absorb and reflect more heat back upon the Vines than a rough mulching, and hence assists ripening. Finally, any excess of leaves should be pushed slightly aside or picked off. I by no means, however, advocate extensive defoliation. The leaves were given to the Grape for a covering, and exposure of the fruit to a fierce autumnal sun, unsheltered, might roast, assuredly not ripen it. Yet the other extreme also hinders the ripening process, and lowers the quality of the fruit. The sun should play hide and seek with the fruit among the leaves, and the Grapes should be found by rather than hidden from the sun, especially in the autumn; therefore a few leaves, and those the smallest and furthest removed from the fruit, should only be taken off. It would often be a great advantage, too, if the fruit were kept dry for the last month, by the use of temporary shelter and copings of glass or any other impervious material. Something, but not very much, however, may be done to ripen out-of-door Grapes after they are separated from the Vine. If cut with as much wood as possible attached, and the ends placed in water, the fruit and leaves exposed to the light, but shaded from the sun, and kept in a warm room or glass house, the quality of the fruit will go on improving for a week or two. The stems should only touch the water, or be placed in a wet bed of moss. Under such conditions they do not imbibe sufficient to injure the quality of the Grapes.

KEEPING OF GRAPES.

This was pretty well understood by the old growers; they kept their Grapes in paper bags, boxes, drawers, and jars, packed in wool, bran, or sawdust. Placing grapes in jars has gone out of fashion, though the other day I saw something like a proposal to renew it. Many of the imported Grapes come over packed in barrels, in cork chips, which are light, dry, and clean. In olden times each bunch was wrapped in soft paper, stowed away in jars or alternate layers of paper and sawdust, or bran, and the mouths of the jars were bladdered over like pickles. The Grapes were then kept in dry rooms, with a fire in them in wet weather. The favourite method, however, was to cut the wood, and seal up both the ends with sealing wax, and suspend the Grapes in a dry room. In this way Grapes will keep well for two or three months. They should be looked over every week, and every injured berry should be carefully cut out.

CHASSELAS.

(To be continued.)

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Keeping Marie Louise Pears.—The best way to keep these is to let them hang on the tree, putting a net in front to keep off birds, and also fastening the net at the bottom, applying at the same time some moss to prevent bruises when they drop, when they should be eaten. You may preserve them till after Christmas in this way. I have to-day eaten some from the trees, and also some that were gathered and stored in the usual way, and I can assure your readers that those on the trees are much the best.—*A. MacFarlane.*

How to improve Barren Fig Trees.—When I came here, upwards of twenty years ago, I found two old Fig trees. I nursed them up for years in the usual way, and had but few ripe Figs. Some years ago, when pruning my Peach trees in summer, and in despair about my Figs, I shortened all the young shoots to three leaves, without regard to whether they bled or not, and I gave the trees no covering in winter. Since then they have given me so much satisfaction, that if I had 500 Fig trees, after the wall had become furnished I should follow this system of stopping the shoots.—*W. W.*

Diseased Grapes.—In my vineyard I have, among other kinds of Grapes, one vine of West's St Peter's, that for two years before beginning to colour has had most of the berries covered with round dark, nearly black spots, which to some extent disappear when the Grapes colour, but seem to leave the skin so tender that half the Grapes are cracked in the skin. As none of the other Vines or pots have been similarly affected, I am puzzled to find the reason, and beg to trouble you on the subject.—*J. D.* [Can any experienced Grape-grower throw light on this matter?]

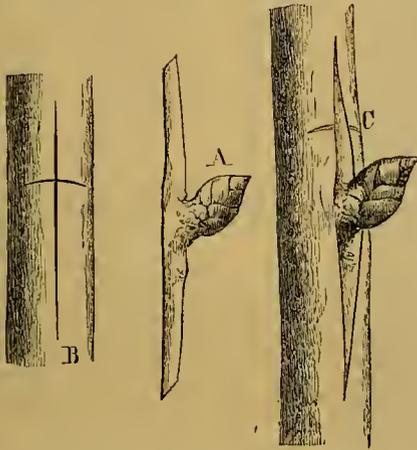
Low v. High Fruit Trees.—An Illinois fruit grower, who has 12,000 Apple and from 4,000 to 6,000 Pear trees, finds that "those with low heads of the same varieties show at least two-thirds more fruit, as large or larger, and as high coloured as those with high tops." To test the matter he cut off in certain rows all the limbs from 4 to 6 feet from the ground, and in others encouraged the limbs to start close to the surface, and in the latter case neither thinned nor pruned, except occasionally to lop away a too lusty shoot in order to preserve a symmetrical appearance or an evenly balanced head, and the above is the result.

THE PROPAGATOR.

THE ART OF GRAFTING.

(Continued from p. 412.)

SHIELD-BUDDING IN NURSERIES.—In large establishments shield-budding is a matter which requires continued attention. It is necessary to know when to seize the moment favourable for grafting each species and for operating in different parts of the grounds, as well as to keep an eye on the scion branches of rare kinds, in order to utilise them at the proper time. Great heats accelerate or retard the flow of the sap, rains interfere with the workmen; advantage must therefore be taken of favourable days to have the work carried on rapidly. Generally it is performed by two men, a grafter and a bandager. Besides these a workman goes on in advance, clearing and preparing the stocks. The principal prepares the scions, classifies them, does the numbering, and enters the work in the register of the establishment. A skilful grafter can keep two bandagers busy, but it is better that he should do some of the bandaging himself, for two bandagers are likely to pass over some of the buds without securing them, and in that case of course they are lost. It is also a good plan never to leave a row of subjects just budded without glancing over them to ascertain that they are all budded and properly bandaged. A hundred bud-grafts per hour is the

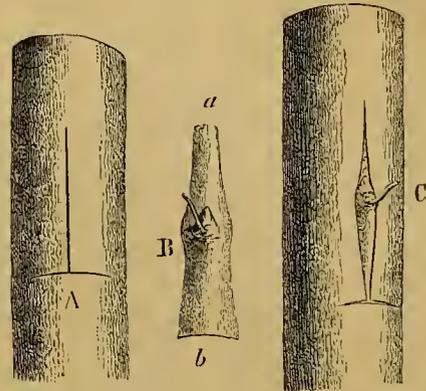


Budding with a Cross-shaped Incision.

average work of a good grafter. Of course with Rose trees, Apricots, or Chestnuts, the scions of which are spiny, or angular, or highly-developed, progress is not so rapid as with Apple trees, Peach trees, or Lilacs. Tall standards are not so quickly grafted as low ones, although in the case of the latter, both grafter and bandager have often to stoop considerably at their work. First-class grafters in our establishment have reached the number of 250 bud-grafts per hour (and even 300 with the Doucin Apple stock planted at intervals of a foot), but a performance like this is quite unusual, and we may add, hazardous to the ultimate success of the grafts; we do not therefore recommend it. It is better to proceed more slowly and to act with precaution. We shall also observe that our nurserymen do not entrust the office of grafter to any but steady workmen, who have served a regular apprenticeship as bandagers, and who are sufficiently experienced in the work of grafting.

BUDDING WITH A CROSS-SHAPED INCISION.—If the buds on the scion-shoot should be rather large for the diameter of the stock, for example those of the Service tree or of the Chestnut (A), they will not be properly held in the incision unless it is made in the form of a cross, which is made with two cuts of the knife, instead of the T form: the upper part of the bark belonging to the bud is slipped into the upper part of the incision B, and is there held fast in a firm manner, which could not be secured by the ordinary process. The bandage is applied beginning either at the middle of the incision C, and finishing at both ends, or beginning at the top, taking care to fasten it firmly.

BUDDING WITH A REVERSED INCISION.—When the sap of the stock is in excess, as with Maples in cold districts, or with Orange trees in warm ones, there is danger of the superabundant fluid smothering the bud. This is counteracted by making the incision in the bark of the stock upside down (\perp instead of T). In the incision (A) the insertion of the graft-bud (B) is made from below upwards (as at C). The bark of the bud (B) is cut with a point at the upper part (a) to facilitate its insertion, and the lower part is cut square (as at b) to correspond with the horizontal incision in the stock: it is thus held properly in position. Of course it is merely the incision in the stock which is reversed, the bud being always inserted in the usual manner. The bandage is applied first at the lower part of the incision and worked up to the upper part, where it is fastened off. If applied in any other way the bud is liable to be displaced.

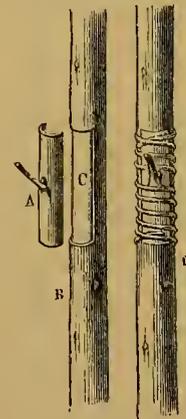


Inverted T Budding.

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VENEER SHIELD-BUDDING.

This method is sometimes employed when the sap of the stock does not flow sufficiently freely for inoculating the bud under the bark. When the stock is comparatively small in diameter, or has a thick bark difficult to be raised, or when the scion-shoot is curved and has the buds crowded closely together, it will be best to insert the bud by veneering. The bud (A) is removed by the ordinary process, or by one more primitive. The four sides of the strip of bark connected with the



Shield Budding.

bud are first marked out with the grafting-knife; the leaf-stalk at the bud is then taken by the base, and by a skilful movement of the hand the whole is detached from the branch. Should there be any fear of injuring the bud, the operation may be facilitated by slipping the end of an ivory spatula under the bark. This is preferable to using thread or hair, as recommended by ancient authors. The bud (A) is placed on the stock (B), where it is intended to be grafted. With the point of the grafting-knife, the outline of the strip of bark is

traced on the stock. The bark within this outline is then removed (as at C), and the bark of the bud put in its place. It is then carefully bandaged (as at D) with cotton or wool. The metro-greffie might be used here with advantage, both in removing the bud and also the bark of the stock. This method is intermediate between ordinary shield-budding and flute-grafting. By increasing the width of the strip of bark attached to the bud, we obtain the annular or ring-shaped strip for flute-grafting.—*C. Ballet.*

(To be continued.)

Grafting Vines.—I have a well-established Vine, but much wish to graft on it a different variety. Which is the best plan?—Graft, inarch, or bud with a good eye? Will you kindly state how and when. Can I bud on the old wood?—*R. S.* [What is termed bud grafting is the surest mode of quickly establishing a new or different variety on an old Vine. As the object is to substitute another for the present variety, bud or graft on the old wood, near the bottom, thus: Cut off a piece of wood of last year's growth 3 or 4 inches long, with a plump bud well ripened in the centre of it. Then cut away one-half of the wood lengthways, taking care not to destroy the pith in the woody base of the bud. Cut the ends perfectly clean and straight, place the prepared bud on the stem of the old Vine, and mark out the exact length and breadth of the same; cut out a part of the stem sufficient to hold the bud, and see that at least one side and the two ends fit the bud perfectly. Place the bud with its woody bottom in the stock; tie firmly and cover with clay or grafting cement. On a large stem several buds may be inserted, to insure two or more shoots if desired; and to guard against failure. The best time to graft thus is after the Vine has partially broken into leaf. If the process is performed in a dormant condition of the Vine, the bud is in danger of being displaced by the rush of sap from the wood. Of course it can be tied on, but the rush of sap is fatal to the union of the two woods; but after growth has fairly begun, bleeding from wounds is moderated, or altogether ceases. The top should not be wholly cut off until the union of the bud with the stock has taken place. The top is useful in two ways. It draws up the sap past the bud, and so hastens the union; and it also prevents an excessive rush towards the new bud. As soon as the bud has grown a few inches, the old top may be removed. Of course the buds should be kept pretty moist until growth takes place. A simpler mode of budding may be employed in the autumn. The buds are inserted in a similar manner to the others. Great care must be taken to preserve their vitality until the union (which is speedily effected by the descending sap) is perfected. By budding in autumn time is gained. The French and others graft Vines in a dormant state, as they do other plants. Inarching answers admirably when the stock and scion are about equal in age or size. But no plan is, upon the whole, equal for a case like that above to bud grafting. I have had such buds make 20 feet of wood in one season, and that too after the middle of June.—*D. T. F.*]

Grafting Camellias.—I have a good specimen Camellia, but wish to graft upon it a better variety. How am I to proceed, and when?—*R. S.* [September is an excellent time for grafting Camellias; your plant should be cut down and cleft grafted according to the plan described in THE GARDEN, see p. 175. Care should be taken to use a sharp knife for the operation, and to keep the plant afterwards close, cool, and shaded, in a frame or house, or better still, in a frame in a house. If not convenient to graft in autumn, let your plant flower; it may then be grafted in April, which is the time for spring grafting, but September is the best time.]

BIRD-FRIENDS OF THE GARDENER AND FARMER.

In jotting down the following names I have placed them pretty much in the order of merit in which they stand in relation to man.

Rook.—In all light soils, where "wire-worms" (larvæ of the genus *Elatér*) abound, also those of the *Tipulæ* and *Noctuæ*, it would be almost impossible to grow crops without the friendly assistance of the rook. In this immediate neighbourhood, where the soil is cold, strong and heavy, and consequently very free from wire-worms, rooks and rookeries are comparatively scarce, but where the soil is light and chalky, I can stand and see seven large rookeries within a radius of three miles. For at least nine months in the year, rooks are purely insectivorous; and they may be easily compelled to be so for the remaining three months.

Starling.—A dear lover of ripe Cherries, but of the utmost service in ridding pastures of the larvæ of *Tipulæ*.

Owls.—Of these most useful birds I need say nothing beyond the fact that a pair of white owls with young will supply their nestlings with not less than fifty mice every night, and as they have a success-

ion of broods during the summer it is almost impossible to estimate the benefit derived from them.

Kestrel.—Another great destroyer of field-mice.

Peewit.—Almost entirely insectivorous, feeding chiefly on worms and larvæ which are near the surface of the land, such as those of *Noctua Segetum*, *N. exclamatoris*, &c. It is also amusing to watch them through a telescope running and picking up imagoes of Coleoptera and other insects.

Brown Linnet.—During the summer insectivorous, but no less serviceable during the autumn and winter months. On light chalky soils, where those pernicious weeds Charlock and wild Mustard abound, and have shed their seeds, flocks of brown linnets may daily be seen ridding the ground of seeds which, be it remembered, will lie in the ground many years without vegetating—in fact, when deeply buried only waiting to be again turned up sufficiently near the surface to the vivifying influence of sun and air.

Wagtails.—In some counties called "fish-washers." Food almost entirely confined to insects and the larvæ of small dipterous—to wit, those of the genus *Culex*, to which the true mosquito belongs: the latter, *Culex pipiens*,—and probably allied species,—has been abundant the latter part of this summer, and in fact, is so now (September 18th). The swarms of insects which attacked the reapers, I think in Kent (*vide* daily papers), were, in all probability, swarms of winged ants, Hymenopterous insects of the genus *Formica*, which sting. Mosquitoes have not this power, but raise a most irritating bump by inserting the point of the proboscis in the skin and sucking up the blood: the operation is performed only by the females.

Goldfinch.—Feeds on small seeds; large flocks may often be seen on the heads of thistles that have been allowed to go to seed.

Chaffinch, Brambling, Lesser Redpoll and Siskin.—Chiefly on small seeds of pernicious weeds; the first two especially on the seeds of Charlock, wild Mustard, and different species of *Veronica* that occur in cultivated land.

Pipits.—Insectivorous.

Song Thrush and Redwing.—Two most useful birds, living almost entirely on snails. Redwings also open the excrescences on the bulbs of Turnips, and extract the small white maggot which they contain.

Stone Curlew, Golden Plover and Common Curlew.—All most useful in keeping in check insect-pests.

Partridge, Quail, and Landrail.—Chiefly preserved for their direct value as an article of food, but really more valuable on account of their devouring large quantities of "grubs" (larvæ of *Noctuæ*), as well as larvæ and imagoes of other injurious insects.

Nightjar, Cuckoo, and Spotted Flycatcher.—The latter has rather a penchant for ripe red Currants; otherwise all three, as far as my experience tells me, are nearly insectivorous.

Woodpeckers and Nuthatch.—Destroy the larvæ of *Sirex* and other wood-boring insects. The nuthatch is fond of hazel-nuts, which it securely places in crevices of the bark of Oak trees, &c., and then dexterously splits them with its sharp-pointed bill. Where the birds are abundant, it is amusing to watch them first fix their nut firmly in a slit of the bark, and then hammer away at it, and so intent are they with their hard work that one may walk almost close to them without disturbing them.

Hedgesparrow and Robin.—The former is a most industrious and useful little bird, picking up tiny insects and tinier seeds. The robin is also useful in this way, but very fond of ripe Currants.

Creepers, Wren, Goldcrest, Longtailed Tit, Cole Tit, and Marsh Tit.—All more or less useful in preying on minute, and perhaps otherwise indestructible, insect-pests. I am inclined to add the blue and great tits to this list. Although in ordinary seasons I grow ten or twelve bushels of Filberts for private use, and have examined scores of bunches that have been bored by tits, I invariably found, by the portion of kernel left in the shell, that each nut had contained a larva of the mischievous nut-weevil or some other insect. The blue and great tits are most mischievous to ripe Apples, but, if kept from these, they are almost entirely insectivorous, yet in the winter they will eat bread-crumbs and small seeds.

Wheat-eater, Whinchat and Stonechat.—Feed almost entirely on insects: the first-named may often be seen sitting on the ears of wheat when in "shock," from which, like the spotted flycatcher, it pursues and captures a passing insect, returning generally to the same "shock," of wheat. In the above list I have not thought it necessary to mention a host of our summer migrants, almost the whole of which are entirely insectivorous, although the greater white-throat, blackcap, and garden warbler are remarkably good at ripe Currants, and certainly have no objection to Cherries.—*Zoologist.*

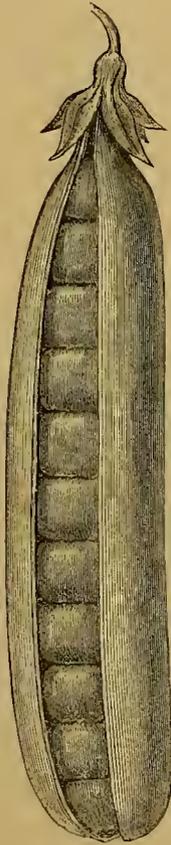
THE KITCHEN GARDEN.

LAXTON'S NEW PEAS.

Of these we furnish two illustrations, viz., Superlative and Omega. The first is a second-early Marrow, a cross raised between Ne Plus Ultra and a hybrid of Supreme. The pods, as will be seen, are very large, slightly curved, rounded in form, and bulged out at the sides, sometimes flattened and irregular, containing from eight to ten large deep green Peas, but not sufficiently large to fill the enormously large



Superlative.



Omega.

pods. Plant very robust, from 7 feet to 8 feet high, producing numerous pods, mostly in pairs. This comes into use fourteen days after Dillistone's. It is a handsome Pea for exhibition purposes, but its flavour is scarcely so good as that of some of Knight's Peas. Laxton's Omega is a late green wrinkled Marrow, having nearly straight pods, which are round and very closely filled, showing the Peas in the pod up to both ends. Each pod contains from eight to

ten large Peas of a deep green colour, very sweet and excellent. The plant grows about 2½ feet high, and is of a branching habit. It comes into use a day or two after Ne Plus Ultra, and a few days before Veitch's Perfection; but remains green, sweet, tender and good, several days later than either. This is considered to be one of our best late Peas, reports concerning it from all parts being highly satisfactory; indeed several say it should have been called dwarf Ne Plus Ultra, from which variety it has been bred.

EARLY POTATOES WITHOUT GLASS.

In any out-of-the-way part of the garden, where the ground is level and well exposed to the south and west sun, take out a pit, running east or west, in length according to your means and accommodation, in width 7½ feet, and in depth 2 feet at the front and 1 foot at the back, which will leave the bottom with a good slope to the south. This done, procure a sufficient number of stout Larch or other posts 9 feet long; char their bottom ends about 3 feet up, and sink them that depth, including the excavated foot, along the back of the pit, about 8 feet apart, taking care to have the tops level and in a line. This will leave them standing 6 feet above the ground. Then nail a stout rail along on the tops of the posts, allowing it to project 1 inch over towards the pit; nail another rail along the bottom of the posts on the same side, about 6 inches above the ground line, and upon these nail, vertically, rough boards 6 feet long, keeping their top ends flush with the top rail, which will allow the bottom ends to touch the ground or thereabout; for, as the pit has to be filled up above the ground line at the back, it is needless to allow the boards to project below that line. Boards about ¾ inch thick will do, and in nailing them on see that the edges meet closely. The back finished, sink a corresponding number of posts similarly prepared, and about 3½ feet long, along the front of the pit, each opposite its neighbour at the back, allowing their tops to stand 15 inches above the ground; nail another rail on the top of these, and lastly nail slight rails across the pit on every pair of posts, at the angle formed by the back and front lines, and the framework is completed. It is not needful to board up the 15-inch space between the ground and the rail on the top of the front posts, for such would only shade the Potatoes from the sun. It is a good plan to pitch the woodwork over to preserve it; and this having been done, proceed to form the Potato bed as follows. If the situation is a wet one, put at least 6 inches of drainage in the bottom of the pit, and lay a row of 2-inch drain tiles along the front, just inside the posts, to carry off any water that may collect to the nearest drain or outlet. If, however, the situation is dry and the subsoil porous, no drainage will be necessary; but whenever there is the slightest doubt of the water stagnating for the shortest period drain well, for on this hinges much of the success in keeping up a high root temperature. This is an all-important matter where the sole dependence is upon sun heat; for we know that the capability of any soil to absorb and retain heat is just in proportion to its dryness. The drainage materials may consist of rough stones or cinders for the bottom, and smaller stones for the top. If sods to cover the drainage before putting the soil in cannot be procured, more care must be taken in completing the drainage by filling up the crevices, so that the soil may not eventually work down among the stones and choke it up. Loam that has been laid in a heap until the fibre is dead, should form the staple of the soil; and if this cannot be got conveniently, ordinary good garden soil will do. In either case it should be lightened with plenty of leaf-mould and peat, or either of these alone; but we recommend peat, and also a good proportion of charcoal or charcoal dust, in order to give the compost as dark a colour as possible, so as to increase its heat-absorbing power to the utmost. In this respect charcoal is a powerful agent, not to speak of its lasting manurial qualities.

The compost may be prepared any time during the winter, as opportunity offers; but the pit need not be filled with it in the first instance, at least until planting time. Afterwards it will not be needful to change the soil every year, but only add a dressing of fresh loam or manure. Eighteen inches of soil will be ample, and this, with the six inches of drainage, will raise the bed up to the ordinary ground level in front, and one foot above it at the back against the boards, which may be buttressed behind to the same depth by the soil which is taken out in excavating the pit. If these directions are carried out, the bed will slope well to the sun when finished, when we must turn our attention to the covering for the pit. Many kinds of sheeting are recommended for horticultural purposes; but nothing equals "frigi domo" as a frost protector. For a pit of the width stated, it should be 3 yards wide, which will be sufficient to cover the pit from the top of the paling at the back down to the ground in front. It should be tacked on to stout wooden rollers for rolling it off and on morning and evening; and, if it is

bound along the edges, and ties fastened every 6 or 8 feet apart, it can be secured back and front in windy weather.

Everything being prepared, we come to the planting of the Potatoes. Of sorts, *Mona's Pride* is one that gets early to a good usable size—earlier than almost any other; and to succeed it there are none better than the old *Ashleaf*. Neither of these make great tops, which is a consideration, inasmuch as the less they shade the ground from the sun's rays the better. It is advisable to procure the sets early, say this month, which gives them time to sprout about half an inch, if they are kept in a temperature of 45° before planting. It is much better than forcing the tubers to start in heat, and afterwards planting in cold ground. The middle of February or beginning of March will be soon enough to plant. Before planting, all the buds except the stronger ones should be rubbed off the sets with the finger and thumb, and they should be planted in rows 18 inches apart, 6 inches asunder in the row, with the bud ends all pointing one way, and 2 or 3 inches deep. To some this may appear rather close planting, but it will not be found to be so if only one bud is allowed to grow; and six or eight nice usable tubers at least may be calculated upon at every root. After planting, the frigi domo should be rolled over the frame whenever the weather is windy, cold, frosty, or wet, be it day or night; and no opportunity should be lost of utilising every warm ray of sunshine that can be got. In March and April the sun has often great power, and will raise the temperature of the ground considerably during the day; but the sunniest days at this season are, as a rule, followed by the coldest nights, and the earth, which is an absorbent during the day, is a quick radiator at night, losing nearly all that it has gained; hence the value of the frigi domo, which should be rolled on every evening at such times to prevent radiation as soon as the sun's power begins to wane, and taken off again in the morning when he gathers strength. By timely and constant attention in this way, the Potato bed will soon get warm, and the Potatoes will be popping through the soil in a very short time, long before they do so in the open border. A little more attention will be necessary in frosty weather, to shut up early; and the covering should also be rolled on in cold windy days, or when snow or sleet falls, the greater part of which the frigi domo will carry. It is at such times that danger is to be feared from frost, for the frigi domo gets like a cake of ice, and much of its non-conducting power is lost. When such is the case, look at the Potato stems in the morning before uncovering them, and if they are frozen—which you can tell by feeling if the leaves are rigid, or keeping a thermometer in the pit—keep the cover on till the temperature rises above the freezing point, and then syringe the tops liberally with water at a temperature of 38° or 40°. This will thaw them in a short time, when the cover may be rolled off and dried. When the stems are about 6 inches high they must be earthed up, not by ridging in the usual way, but by top-dressing between the rows with 2 or 3 inches of leaf soil, or any other light compost similar to the soil of the bed which can be had. After this, attention to covering up in cold weather, and abundant waterings, with water at a temperature of 90° or so, when the soil is dry, will be all that is needful until the crop is ready for lifting.

Where facilities exist, a Potato bed of the kind we have here described might be aerated in a very simple manner, which would increase the temperature of the soil even more perhaps than could be done by economising the surface heat to the utmost. To do this, two rows of 4-inch drain tiles should be laid the whole length of the pit before the drainage is put in—one row about 18 inches from the front, and another the same distance from the back, which would divide the space about equally. The tiles should be laid half an inch apart, so as to allow the warm air to get out among the drainage, which should be deep enough to cover the pipes about 4 inches. An earthenware drain pipe, 6 inches in diameter, should then be sunk vertically at the lower end of the pit, with its top projecting about 6 inches above the ground, and its bottom end communicating with the two rows of pipes under the bed. These pipes should also be connected at the other end of the pit, and carried forward by a single row of pipes, well laid and securely packed with earth, to the nearest warm structure, where the air should make its exit at the warmest corner of the house, and considerably above the level of the Potato bed. By these means the equilibrium will be disturbed, and when the tubes at both ends are open there will be a constant current of air below the bed, from the pipe at the bottom end of the pit to the hothouse at the other. Of course care would be required never to open the bottom pipe, except when the temperature of the air was above that of the soil, when the warm current could be admitted. The pipes at both ends should have stoppers, and they should be opened and shut at the same time. After the Potatoes have been lifted, the paling can be used for training Tomatoes against, and the bed for Lettuce or Endive during summer and winter. On the shady, or north side of the paling,

Pentstemons, Carnations, Calceolarias, &c., can be struck successfully, and the same can be sheltered effectually under the frigi domo during winter. In fact, such a pit is easily made, cheap, durable, and need never be idle all the year round.—J. S. W.

Exterminating Jerusalem Artichokes.—In some countries this plant becomes a weed very hard to get rid of. The following plan is adopted in Germany, where the plant is cultivated over considerable tracts; it has its place in rotation before winter grain. After the crop has been removed, sheep are tethered on the land with long ropes (or turned loose if there are fences). They eat off the young sprouts as fast as they appear, and the plant dies for want of support, which it can only receive from leaves.

THE HOUSEHOLD.

POTATO SALADS.

A JUDICIOUS mixture of oil, vinegar, pepper, and salt is one of the simplest as well as one of the most appetising sauces known. It can be compounded at a moment's notice on your own plate at dinner, and there is no fish, flesh, or fowl, or vegetable of any kind, hot or cold—plainly cooked of course—that it will not improve. Take, for example, a cold boiled Potato—no very enticing morsel—but slice it, sprinkle it with pepper and salt, pour over it a little oil and vinegar, turn it over, and you will turn an insipid morsel into a positive relish. Again, take cold Cabbage, Scotch Kale, or greens of any sort—your ordinary British cook I opine would throw them away, for, although there are many ways of warming up these things other than making a salad of them, British cooks, as a rule, are either too lazy or too ignorant to put them into practice. As for making a salad of cold greens, not only the cooks would rebel against such a notion, but English people in general would shrink from it in disgust. Oil is an ingredient up to which the British palate has yet to be educated. In the mind of the untravelled Briton oil is vaguely connected with Jews, steam engines, and the Arctic regions. If induced to taste it, he pronounces it nasty, and in this verdict I fully agree with him; for the oil which you will find in nine crucets out of ten is indeed most abominable. The reason is plain; oil being seldom used in English cookery, a small flask of it will last the British housewife many months, and stale oil is as great, if not a greater abomination, than rancid butter. Oil is a most delicate liquid, which, unlike wine, does not improve by keeping—at least for eating purposes—under the most favourable circumstances. In an English kitchen or pantry the flask is left open as often as not; flies and often a black beetle or two meet their death in it, and, being hid from view by the straw covering of the vessel, although they are kept in excellent condition by the oil, they materially deteriorate the quality of it, and the unsuspecting housewife lives on in the mistaken belief that oil is very nasty. Then again, the demand not being very great, the oil procurable from ordinary grocers is already too old and stale when you buy it; but go to Barto Valle in the Haymarket, to Piccirillo in Wigmore Street, to Morell or Fortnum & Mason in Piccadilly, ask for what in trade parlance is called "Sublime" salad oil, taste it, and you will then have some idea of what salad oil is. If you taste it out of a wine-glass it will leave your mouth as clean as would Amontillado, and with as pleasant a nutty flavour after it. There are numerous kinds of oil: there is green oil and white oil, and straw coloured oil; there is oil with a strong (too strong) taste of the Olive; there is oil perfectly tasteless (such as the Jews use), and then there is rancid oil, as I have just alluded to, only fit to grease locks and hinges. For purposes of salad making, the best sublime Lucca oil is the oil to use; buy it at a first-rate shop, keep it in a cool place in summer, and in a sufficiently warm place in winter to prevent it from congealing, and, above all, keep it always well corked.

But to return to the matter of cold Potatoes. I remember inquiring of an orthodox British cook what became of them in an English kitchen, and the answer was, that they were only fit to go into the "waste-tub." "No lady would be so mean as to require cold Potatoes to be kept," I was informed, and "no cook who knew her duty to her fellow-servants would dream of doing such a thing." Indeed, my own cook, who knows better, tells me that she was never being ousted from a former place by presuming to keep such things; her kitchen maids rebelled at the idea, and threatened to complain to the housekeeper of so unheard-of a piece of shabby meanness. Yet these cold Potatoes—not to speak of the numerous modes of warming them up, besides the very simple form described at the beginning of this paper—may be made the foundation of various salads which only require to be tasted to be appreciated even by untravelled Britons, I do make bold to say. Here are some of them (salads I mean); let those try them who will—they bring their own reward.

1. Put four table-spoonfuls of oil into a bowl, with pepper, salt,

and French mustard to taste, mix all well together, and add two tablespoonfuls of tarragon vinegar, then some Parsley, and a few leaves of Thyme or Marjoram mixed very finely. Cut the Potatoes in slices, toss them in this sauce, and serve them on a dish rubbed with a Shallot or a clove of Garlic.

2. Make the sauce as above, and substitute English for French mustard, and finely chopped Mint for Parsley and Thyme.

3. Mince finely Tarragon, Capers, and Anchovies (washed quite clean and freed from bones), add to them the yolk of a hard-boiled egg passed through a sieve; beat up together oil, vinegar, pepper, salt, and French mustard, in due proportions, mix with the above, and dress the Potatoes with the sauce.

4. Take equal quantities of cold boiled Spanish Onions and Potatoes, cut them in convenient pieces, sprinkle with dry sweet herbs, then dress with oil, vinegar, salt, English mustard, and plenty of pepper.

5. Take two parts of Potatoes, one of Beetroot, and one of hard-boiled eggs; cut them all into shapely pieces, and dress them with a sauce made of oil, vinegar, pepper, salt, and French mustard, with the addition of a Shallot finely chopped, and some Tarragon and Chervil minced in the same manner.

6. Mix up in a bowl, slightly rubbed with Garlic, some salad oil and Lemon juice in equal quantities; add pepper, salt, and some English mustard; clean half a dozen anchovies, pound them in a mortar with a couple of yolks of hard-boiled eggs, some Tarragon and Chervil; work in the above mixture with this, and strain the whole over the Potatoes; then have a couple of Truffles minced not too fine, and sprinkle them all over the salad. Or you may take equal quantities of Truffles and Potatoes in slices, and dress with the above sauce, but then the dish becomes as expensive as it is exquisite.

I think I have said enough to show that a salad of Potatoes may be as simple or as elaborate, as cheap or as expensive, as may be liked. Many other things may be used in combination with cold Potatoes, such as Olives (stoned), preserved tunny, or the preserved roe of this fish, or of cod and salmon, sardines, herrings, pickles of all kinds, cold meats, ham, German and Italian sausage, &c., until the simple Potato salad merges into the more substantial meat salad of Northern Europe. One word in conclusion—The thrifty housewife and the intelligent cook who may read this should bear in mind that, although the Potatoes should be cut in slices of a uniform shape, and should be tastefully arranged on the dish, so as to produce a good effect to the eye, this is by no means necessary to produce the same result to the palate.—*Queen.*

The Dangers of Tea-drinking.—Teetotallers are continually warning people of the poisons which they say are always lurking in all alcoholic drinks; but it may be questioned if tea be any whit less noxious than beer, or wine, or spirits, at least when it is purchased at a common grocer's shop. Out of twenty-seven specimens of tea tested recently in Glasgow, we find it stated in the *Globe* that only six were genuine, and the others were composed of such ingredients as these:—Iron, plumbago, chalk, China clay, sand, Prussian blue, turmeric, indigo, starch, gypsum, catechu, gum, the leaves of the Camellia, Sasanqua, *Chloranthus officinalis*, Elm, Oak, Willow, Poplar, Elder, Beech, Hawthorn, and Sloe." Old jokers often say that tea is a Sloe poison, but when tea is made of Sloe leaves mixed with turmeric, plumbago, indigo, and Prussian blue, it can hardly be considered a fit matter for a joke. "*Tea veniente die, tea decedente*" is the drink of other than teetotallers; but certainly the less they take of it the better, unless by testing they assure themselves that it is really tea they take.—*Punch.*

NOTES AND QUESTIONS ON THE HOUSEHOLD.

Damp-proof Mucilage Labels for Preserve Bottles.—Macerate five parts of good glue in eighteen to twenty parts of water for a day, and to the liquid add nine parts of sugar-candy and three parts of gum arabic. The mixture can be brushed upon paper while lukewarm; it keeps well, does not stick together, and when moistened, adheres firmly to bottles. For the labels to be used in places subject to damp, it is well to prepare a paste of good flour and glue, to which linseed oil, varnish, and turpentine have been added, in the proportion of half an ounce each to the pound. Labels prepared in the latter way do not fall off in damp places.

Medical Properties of the Tomato.—There may, perhaps, be some foundation for an assertion which has been lately several times repeated, that the Tomato is an efficient "deobstruent," whatever that may be, and will be a useful substitute for calomel by reason of its gentle action on the liver. It is said to be a useful and harmless remedial agent in biliary obstruction, and is described as "almost a sovereign remedy for dyspepsia and indigestion"—obviously an exaggeration, perhaps a misstatement. It has been tested in cases of cough, and succeeded; so have many thousand remedies. There is little or no positive evidence in its favour; but enough of positive assertion and probable virtue to make it worth the attention of experimental pharmacologists. It may be used not only as an article of *materia medica*, but has the advantage of being an agreeable item in the *materia alimentaria*.—*Lancet.*

GARDENING ROUND LONDON.

(DURING THE PRESENT WEEK.)

BY OUR SPECIAL REPORTER.
PRIVATE GARDENS.

The Flower Garden.—Now that deciduous trees have shed their leaves, flower gardens, lawns, and pleasure grounds are more easily kept clean than they were some few weeks ago. Evergreen shrubs, although better planted some time ago, are still being removed. Deciduous ornamental trees and shrubs are also being transplanted. Walks are being made and repaired, and Box and other edgings laid. Irregularities in lawns are being renovated, and where necessary the turf is relaid. Where flower beds are required to be altered in shape, enlarged, or lessened, means are being employed for doing so. Herbaceous borders are cleaned, and in many cases the decayed stems are removed, but in some instances they are left as a protection from frost, and are removed in spring when the plants begin to grow. Biennials, such as Sweet Williams, Canterbury Bells, Wall-flowers, Hollyhocks, Honesty, &c., and Brompton and Intermediate Stocks are being transplanted. Perennials will not be transplanted till they begin to grow in spring, when they can be divided and removed with greater safety than at present. Autumn-sown annuals are being thinned, and in some cases transplanted to lately prepared flower beds. In spring gardens Dutch bulbs are still being planted in beds and borders. Dahlias and roots that have been lifted and dried are stored away in some dry and cool place with a little clean straw spread loosely over them. Cannas are left in the beds in which they grew, but where removal was desirable, they have been lifted and stored like Dahlia roots. Rough litter is being laid over the roots of the finer kinds of Conifers, shrubs, and Roses by way of protection. Slight frameworks are erected over Mount Pæonias, &c., to bear a mat in case of hard frost. Chrysanthemums in flower are lifted and potted for indoor decoration, and those still in the open ground have a mat placed over them at night, supported by stakes, so as to keep the flowers good for cutting.

Conservatories.—Chrysanthemums placed amongst plants of an evergreen character, at certain distances apart, and properly arranged as to colours, give conservatories at present quite a gay appearance. Some of the Acacias are already beautifully in bloom, and even Fuchsias planted in indoor borders are yet well furnished with flowers. Those trained to rafters, and the bulk of pot-grown plants at rest, are being cut in. Zonal Pelargoniums that were in pots all summer, and from which the flower-spikes were pinched during the autumn, are now subjected to a moist warm temperature, and are producing flowers freely. These which bloomed in early summer, and which were cut back in July or the first of August, are now in an intermediate temperature, and will come nicely into flower about Christmas. Camellias and other evergreen plants still require water in considerable quantities. They are not, however, deluged with it, but are kept moderately moist. Some of the Tea plants in cool parts of conservatories are beginning to be interesting. They form dwarf evergreen bushes, and produce a profusion of pretty white Orange-like flowers. That known as Assam Tea and *Thea chinensis* are now in full beauty. Early-forced Azaleas are also now in flower. Dutch bulbs from the earliest potting are rapidly advancing, and are kept in a moderate temperature. Succession ones are kept under the stages of cool airy houses, plunged overhead amongst Cocoa-nut fibre. Cypripedium insignis and a few other cool-house Orchids are introduced to the warmest part of conservatories, whilst Heaths, Mesembryanthemums, &c., are kept in the coolest positions that can be found for them.

Stoves.—In these a temperature of 60° at night, with a rise to 70° by means of sunheat, is maintained; the atmosphere is also kept a little moist, as considerable injury is often done to both stove plants and Orchids by too dry an atmosphere in winter. During fine sunny weather the plants are syringed about midday, in order that they may be quite dry before night sets in. Achimenes, Gloxinias, Caladiums, and herbaceous Begonias are placed on their sides under stages, so as to be kept dry. Some of the Tydæas are cut back and placed on shelves, but they are not kept absolutely dry. *Torenia asiatica*, one of the prettiest and most easily grown of stove plants, is in full beauty, and when grown in a basket suspended from the roof is very effective. Water Lilies, in some cases, are being cut over, so as to induce them to go to rest, and their room is occupied by young Marantas and similar plants, specimens of which it is desirable to form quickly. Shoots of *Stephanotis*, *Dipladenias*, *Allamandas*, &c., are spread out immediately below the glass, in order that the wood may be the better ripened. *Ixoras* recently potted are plunged in a little bottom heat, to induce fresh root-action. Epiphyllums are now everywhere in great beauty. Of *E. truncatum* there are many beautiful varieties, such as *amabile*, *coccineum*, *aurantiaçum*, *elegans*, *magnificum*, *Ruckeri*.

anum, violaceum grandiflorum, &c., and some beautiful hybrids have been produced between *E. truncatum* and *E. Russellianum*. *Franciscea*s are coming prettily into bloom, and are set on pots, above the level of the other plants, in order to show their beauty off to advantage. Some of the plants not wanted to flower so early are removed to a cooler house. Some of the different varieties of *Æschynanthus* are still gay, and continue to form useful ornaments for baskets. Plants of *Eucharis amazonica* are now subjected to a brisk bottom heat, and have abundance of water, in order to induce them to flower. Plants of *Euphorbia jacquiniæflora* are also liberally watered, and kept near the glass, in a brisk, moist temperature. *E. splendens* and *Bojeri* look well, either on trellises or as wall climbers. They are kept in intermediate houses and comparatively dry. Plants of *Curcumas* are being gradually dried off. *Gloriosa superba* is a beautiful stove climber, more suitable for pot culture than for training along rafters. The stems and leaves of it are now decaying, and the pots, as soon as the bulbs are ripe, are stored away like *Caladiums*. *Mussaenda frondosa* and *luteola* are now at their best, and form fine associates to *Poinsettias*. Of *Rhynchospermum jasminioides*, young plants, potted in peat, loam, and silver-sand, are subjected to a brisk bottom heat, for flowering in January and succeeding months.

Indoor Fruit Department.—Pines are kept as quiescent as possible, and are allowed little water. Vines for fruiting in April were started about three weeks ago by keeping the houses close, and introducing into them such fermenting material as would maintain a temperature of 50° at least. That heat is now increased five degrees, as it takes more warmth to start Vines now than in early spring. The earliest pot Vines are subjected to a temperature of from 55° to 60°. A little fire-heat, with air at the same time, is applied to vineries in which Grapes are hanging, to prevent them from damping. A moist atmosphere is kept up in houses where pot Vines and others are breaking, by sprinkling the paths and walls with tepid water. Figs that have been repotted or top-dressed are placed in cool sheds, or places where the temperature will not fall below 38°. At the time of potting, a good watering is given, which prevents further applications of water for some time. Peach-houses are now thrown fully open. Cherries are being shifted, and stored away in some cool house or well-sheltered border, to where the pots can be protected by a good mulching of leaves.

Indoor Kitchen Forcing Department.—*Asparagus* roots are being lifted and placed on moderate hotbeds. A little light soil is worked in amongst the roots, and the whole is lightly sprinkled over with water. For Cucumbers a bottom heat of 75°, a night temperature of 70°, and a day one of from 75° to 80°, are kept up. The foliage, both of these and French Beans, is well syringed every favourable day. Roots of *Seakale* are taken up and placed in Mushroom houses for forcing. Some roots of *Mint* are also placed in pots in warm houses for a supply of young tops. Some *Chicory* roots are potted and placed in warm dark situations, such as Mushroom houses, to blanch. Some *Radishes* are sown in frames, from which the sashes are removed in favourable weather, but replaced on cold or rainy days; they are, however, always kept on at night, although when the weather is anything like warm, they are tilted up. Young Carrots and Onions in frames are treated like Radishes.

Hardy Fruit Department.—The planting of young fruit trees is still being carried on, one year trained trees being considered best. Old trees are also being transplanted; they lift much better and thrive more satisfactorily where their roots had been cut twelve months prior to removal. Against south and south-west walls Apricots, Peaches, Nectarines, Figs, and a few of the other choicest fruit trees are being planted. Pears and Cherries commonly clothe the western aspects, and Plums the eastern ones. Pruning of Apple and Pear trees is being done, also that of some bush fruits. Cherry trees, if well managed, seldom require pruning. The young wood of Peaches and Nectarines is loosened from the wall, and will be allowed to remain in that state during the winter. In pruning black Currants, some of the worst of the old wood is annually removed.

Hardy Kitchen Garden Department.—In case of cold weather setting in, a quantity of protecting materials has been got together, such as dried Fern, straw, hay, rough litter, twigs of broom, and boughs of evergreens. Leaves of trees are also used largely for the same purpose. *Asparagus* beds are slightly stirred, and a good mulching of short litter is laid on them. On the ground above *Seakale* crowns, six inches of leaves are placed, and a little soil is thrown over them to keep them in their place. Stalks of Jerusalem Artichokes are cut over some inches above the ground, and a layer of leaves is laid over the roots. Around the base of *Globe Artichokes* a mulching is being placed. Litter is also held in readiness to cover the tops of *Celery* ridges, in the event of severe frost. Cauliflowers

coming into "flower" are lifted and planted in Peach houses or sheds, where they cannot be injured by frost or cold rains.

NURSERIES.

Indoor Department.—Now that the stock of New Holland plants has been got indoors, a good deal of time is occupied in tying and arranging them. As much light and air as is practicable is allowed them. Heaths are also stored, and old, unshapely plants are being retied and staked. Of *Doranthus excelsa* a new stock is being got up from suckers obtained about the necks of old plants. They are taken off and inserted in small pots, under handlights, in a close warm pit. Old plants of *Alternantheras*, *Coleuses*, *Iresines*, &c., are kept on shelves near the glass, in houses in which the temperature in winter never falls below 45°. Some growers keep a quantity of young plants of such things during winter for raising spring stock, but these require a higher temperature than old plants in order to winter them safely. Of *Cyclamens* a sowing is being made in pans of light rich earth, which are placed near the glass in intermediate houses. Old plants, and also last spring's seedlings, are now in fine saleable condition. *Brugmansias* are being cut down if ready, and are then stowed away in some dry corner of the greenhouse. *Erythras* are also similarly treated; but although these do remarkably well in the south of England, if the roots are left in the open ground and simply mulched with litter, it requires a temperature of 45° or 50° to winter them satisfactorily indoors. Plants of *Hoboclinium ianthinum* and *atrorubens* are being repotted and plunged in gentle bottom heat. *Luculia gratissima* is similarly treated. *Lilium speciosum* roots are being repotted, and the pots placed on back shelves of the greenhouse and kept moderately moist. The finer kinds of *Petunias*, as they produce cuttings, are being increased. Suckers and cuttings of *Chrysanthemums* are being taken off and propagated. *Clerodendron Kämpferi*, *fallax*, &c., are being gradually dried off. *Lagerstroemia indica*, being also a deciduous shrub, is laid aside in some dry spot after the leaves have completely withered; in spring the plants will be pruned and allowed to start afresh. Palms of different sorts, *Musas*, *Dieffenbachias*, *Dracenas*, *Crotons*, *Marantas*, *Cyanophyllums*, and similar plants required to form nice specimens quickly, are now kept in a brisk moist growing temperature. Young climbers in 4 and 6-inch pots are coiled around one stake and arranged along the back shelves of the stove. Herbaceous and Alpine plants in pots likely to be injured by frost are placed in frames.

MARKET GARDENS.

Unproductive fruit trees are being uplifted and cleared away, the refuse wood burned, and the ashes used for scattering amongst Cauliflowers, Lettuces, Onions, &c., in frames. Young fruit bushes and trees are being transplanted. This cold weather is rather trying for the Mushroom beds; they are consequently covered with mats and additional litter, to exclude the cold. Care, however, is taken that the beds do not become overheated, as such an event would prove detrimental to the present and future well-being of the crop. These Cabbages commonly known as Coleworts are now in perfection, and those for spring use are doing admirably. For spring use it is the early Cabbages that are used, for what are properly termed Coleworts are too apt to run to seed in spring to be of any use at that season; therefore the crops are so regulated as to have all the Coleworts used up by the beginning of spring, and those that substitute them are simply the thinnings of the early Cabbage fields. *Celery* continues in excellent condition; a little more earth is drawn to late crops. Parsnips remain in the ground and are lifted as required for use. Beet and Carrots have been similarly treated till the present, but now that the weather has turned colder a goodly portion of each of these has been lifted and stored. Turnips now form one of the principal vegetables, and are plentifully obtained from August sowings. The hoe is kept at work amongst Leeks, rows of Cabbages, Lettuces, and Endive. Lime is scattered over ground in which young vegetables are growing. Lettuces sown in frames are now up and too far advanced for the ravages of birds. The sashes are removed from the frames on every favourable opportunity, but are replaced to guard them from frost, cold rains, &c. The soil amongst Cauliflowers in frames is loosened by means of inch and half wide hoes. Litter is placed around the cloches under which the Cauliflowers are planted, to protect them from frost.

THE exquisite display of Palms, Ferns, Orchids, &c., which graced the present Lord Mayor's banquet at the Guildhall, on the 9th inst., came, we are informed, from the establishment of Mr. B. S. Williams, Victoria Nurseries, Holloway. The arrangement was excellent, and the specimens selected for the occasion both rich and rare. We never recollect having seen such a fine display in the Guildhall before on a Lord Mayor's day.

THE GARDEN.

—o—o—o—
 "This is an art

Which does mend nature: change it rather: but
 THE ART ITSELF IS NATURE."—*Shakespeare.*

THE SIX OF SPADES.

CHAPTER XXIV.

On the Happiness of a Garden, by the Curate.

BORN in the country, the son of a sportsman, with his love of hunting and shooting strictly entailed; a lover, moreover, of the rod, the bat, and the bow,—in short, of all manly sports and games; not taking Holy Orders until I was thirty years of age, and therefore having had a long enjoyment of all these recreations; I have proved from my own experience that of all outdoor exercises, horticulture is the happiest and best, and have realised the truth of Lord Bacon's words—"Gardening is the purest of human pleasures, and the greatest refreshment to the spirit of man." Allowing, as a gardener, that we have no such grand excitements as may be found in a run of forty minutes with the Quorn, over High Leicestershire (and I have held my own over the pastures of Ashby and from the gorse of Cream); that a day amid the Heather and the Bracken of the moor, with good dogs, a straight gun, and plenty of grouse, surpasses in healthful, joyful influence, a day amid the Ericas of the greenhouse, or the most elaborate collection of Ferns; that to hook, play, and gaff a 20 lbs. salmon, to make a clean hit to square leg for five, or a gold, red, and blue in three arrows at a hundred yards, are triumphs and ecstasies unknown in our gentle craft;—I maintain, nevertheless, that as a constant, continuous, life-long source of cheerful relief and innocent diversion from the work and from the sorrows of life, the recreation of horticulture surpasses all.

Far be it from me, priest though I am, to depreciate the attractions, the merits, which belong to the sports of the field. They make men more manly; they extend the intercourse and the goodwill of our too much divided grades and classes; they promote the energy, the enterprise, the power of a people. No—it is not that I love little the fence, the stubble, or the stream, but that I love the garden more, when I ask the sportsman, in friendly argument, whether his enjoyments are not more capricious, care-fraught, and fugitive than ours?

And just let me say here, that by "the sportsman" I do not intend the selfish sluggard, who but degrades the title, turning fertile acres into rotten boroughs for rabbits, and lounging forth at noon with three breech-loaders, to kill tame birds driven into a corner, amid the yells of his heaters, and a villainous steuch of saltpetre;—nor do I refer to those gallant heroes who maim poor pigeons at Hurlingham, encouraged though they be by the smiles of beauty in their glorious tourney with the doves; but I mean those gentlemen who, having the time and means, and fulfilling their duties as good landlords and good citizens, refresh themselves with horse, and rod, and gun—riding to hounds, and not to gates, seeking their game over a lordship instead of having it driven into a big turnip-field, and rather valuing the exercise and the varied incidents of the day than the number of corpses collected at night, and carted next morning to the fishmonger's shop.

With the true sportsman would I now confer, and would ask (not dissuading him from his own amusements, but persuading him, if I could, to make experiment of mine), How many good runs do you get in a season? How often is your sport spoiled by defect of scent, by a mistaken cast of your huntsman, by a shepherd-dog chasing your fox, or by the sudden disappearance of the wily animal into an earth which was left unstopped? How often have you failed, by no fault of your own, to get a good start, from some large covert, with the pack? Hath not your spirit, proud and elate after a fast twenty minutes over

grass, and over fences which are one moment so grim, so black, so oppressive, and the next, as we bound over them, so exquisitely beautiful,—hath not your spirit drooped within you, to hear at the first check, "I'm afraid, sir, you've got a very nasty over-reach?" Have you not known the sorrowful disappointment, on the morn of that day in which you were going on your favourite hunter to your favourite meet, of gazing upon a world as white with falling snow as your rueful countenance with the suds of soap? And doth not the lamb bleat and the Primrose bloom all too soon for thee?—and lo! the scent will not lie on the hard fallows, and for eight long weary months (from the beginning of March to the beginning of November) thy occupation's gone.

And you, my keen-eyed, quick-footed, ruddy manipulator of "th' imminent, deadly breech"-loader, in your roomy Norfolk jacket, ample knickerbockers, ribbed hose, and well-greased boots—you who, having sighted through your telescope "the antlered monarch of the waste," have brought him, after a long and toilsome quest, stooping, creeping, crawling (a terrible *casus belli*) within rifle range, and have seen in that awful crisis the stricken stag take his last leap and die; you who have so oft astonished your companions, and even surprised yourself, as the rocketing pheasant, the nimble coney, the stilly, solemn, gliding woodcock, the quacking mallard, or the lesser snipe, fell to your fatal fire; yet must you own to sad discomfitures when the "grouse disease" visited the moors, or the poacher with his nets the best preserve, or the summer floods came and "drowned our cocks," with their hens and coveys too; or that glaring sun, or that beastly branch, that Madeira of Brown's, or that big weed of Jones's, marred thine anxious aim, and thy rival Robinson, Robinson the bumptious, Robinson of the jeering tongue, "wiped" thy perfidious "eye." You heard him laugh

Adown the forest, and the thicket closed
 Behind him, and the forest echoed "fool."

Nay, even should you escape these sad disasters, your pastime can but last one half the year, and for the other your guns and your rifles must repose in their beds of baize.

And thou, O Pescatore, in whose study (thou studiest Hooks more sharp than Theodore, more pointed than the learned Dean), above the mantelpiece, above that bloated perch, which stares, and gapes, and spreads its dorsal fin, astonished at his own obesity, I have admired so much the portrait of thy smiling self, serene yet jubilant upon the banks of Tweed, and in a suit of ditto, with several salmon, from four to five stone apiece, at thy victorious feet—has thou not moved in drearier scenes than this? Hast thou not left the happy fatherland to find thy river dry, or—what time the burns rush, leaping, rollicking, and roaring, adown the hills,—broad, and deep, and brimming over, until none can fish from its banks? And hast thou not endured the horrible dismay of feeling suddenly that thy fish insecurely hooked, or freeing himself by some desperate leap, or fraying thy line upon the deep hidden stone, was gone! leaving thee as one who drives with a gigantic whip a phantom and invisible four-in-hand, demented, disconsolate, as the Scottish Chief, when

The waters wild went o'er his child,
 And he was left lamenting?

Now, I am not going to affirm that, as gardeners, we are free from all such failures and reverses; I am not oblivious of the mealy bug, red spider, wireworm, cockroach, earwig, beetle, caterpillar, snail, and slug; I am familiar with mildew, canker, and blight; I know that the mellow ouzel, fluting in the elm, has wet his whistle, and proposes to wet it again, with my cherries and other fruit; I have suffered all the ills which horticulture is heir to, from a thunderstorm to a nibbling mouse; but I maintain that a garden, well cared for, has such an infinite variety of charms, that these minute solitudes (bah, grunts the cynic, he calls a thunderstorm a minute solicitude!) only enhance its joys; and that there is no month in the year, no day in the week, in which (always supposing the existence of "a bit o' glass") there is not something new, something beautiful, to interest and to please.

Take, for example, this, perhaps the most dismal month of all our English year—the month in which, so Frenchmen say, we rush in crowds to our trees for suspension, and to our

streams for submersion, with a wild disdain of life; the mouth, of which one of our own poets sings—

No sun, no moon,
No morn, no noon,
No—vember!

and then let me tell you, my brothers of the spade, what pleasure, and what profit also, I have had this day from my garden.

Coming this morning from our matin service, leaving our altar bright and fragrant, as, thanks to you, my friends, it ever is, with the loveliest flowers which art can rear, the sweetest, purest offering, surely, that we can return to HIM,

“Whose breath perfumes them, and Whose pencil paints,”—

I cut a bouquet of the last Roses of autumn (Dijon's Glory, generous Jules Margottin, brave Maréchal Vaillant, and fair Souvenir de Malmaison), intermixing a few bits of hardy Ferns and of feathers from the Pampas Grass. After breakfast writing a sermon with part of my posy before me (if I am here dispelling an illusion that, because I preach without a manuscript, I preach without any written preparation, so much the better) I refreshed myself twice by peeping into my little houses, by a hasty survey of my treasures in vinery, greenhouse, and stove. For luncheon, I had a luscious Beurré d'Amanlis Pear, which I consolidated with a brace of dry biscuits, and medicated with a glass of sherry. In the afternoon I had a dig in my kitchen garden, which made me feel as though I could swarm up the greasiest pole, and eat the leg of mutton afterwards; and then in my parochial walk I took two portions from the bouquet aforesaid, and two small bunches of Grapes, to four of my sick folk; and I would that a certain earnest and eloquent London preacher, who told us, at our Nottingham Church Congress, that we clergy were not to entertain the desire of becoming good gardeners—I would that he had seen the smiles which welcomed both flowers and fruit. S. R. H.

(To be continued.)

NOTES OF THE WEEK.

— A BEN of the greater Christmas Rose (*Helleborus niger maximus*) is now coming into flower strongly in the Wellington Nurseries, St. John's Wood. It is much larger than the common kind, flowers a good deal earlier when both are grown under similar conditions, and deserves a place in every garden.

— THE beautiful *Æchmea Maria regina* is now coming into bloom in Mr. B. S. Williams's Nursery, Upper Holloway. It possesses a vigorous constitution, some of the leaves being nearly 2 feet long and proportionately broad, and the bracts on the flower-spike are bright violet crimson. This fine Bromeliad is quite new, and as yet a stranger in private collections. Its beauty and robust character will, however, when better known, render it everywhere a special favourite.

— *ARISTOLOCHIA DUCHARTREI* is now in bloom in Messrs. Carter's nursery at Forest Hill. Treated as a stove climber it grows luxuriantly, and promises to flower freely. The blossoms are large, of a brownish grey colour, and distinctly spotted with large dark markings.

— THERE are signs that the numerous and fine kinds of *Dracæna* which we now possess will some day break into forms as gaily coloured as our variegated *Pelargoniums*, though of course coloured after quite a different fashion. This tendency is very evident in Mr. Bull's collection of these plants, a good many of which are not yet sent out.

— *BOUSSINGAULTIA BASELLOIDES*, a thick, fleshy-leaved plant, occasionally seen in gardens, and nearly or quite hardy, is now in bloom in the conservatory in the Royal Botanic Gardens, Regent's Park. The flowers are not conspicuous in colour, or large, but hang in close fragrant racemes, suspended in the most graceful manner imaginable. It is worthy of general culture, and would probably make a valuable basket plant.

— THE Civil Service Commissioners have announced that on the 31st of December they will hold an open competitive examination for the appointment of clerk to the curator of Kew Gardens. Candidates must be between the ages of twenty and thirty, and must be familiar with the routine duties of the garden, and competent to direct the foremen in matters relating to their accounts. On the same day the Civil Service Commissioners will hold an examination for the appointment of second assistant in the Herbarium at Kew, for

which persons between eighteen and thirty who are skilled in practical botany will be eligible to compete. In each case the Commissioners will apply to Dr. Hooker, for a report on the technical qualifications of the candidates.

— AMONG shrubs now in flower none are more attractive than *Cistus lusitanicus*, of which we saw a large bush well covered with flowers the other day at Coombe Wood.

— “HAPPY THOUGHTS” in the current number of *Punch* are devoted to gardening. They are the poorest, feeblest, most witless rubbish we have ever seen in type on the subject.

— A LOCAL paper remarks that at Penclawdd, in Carmarthen-shire, there is at the present time, in the garden of a Mr. Rhys Thomas, an Apple tree bearing a second crop of good fruit. The same tree, it is said, yielded an unusually fine crop of fruit in its due season.

— A FRUIT of the Olive has ripened on a south wall at Clapham, near London. Last autumn there were several fruits of good size on the tree, but they all shrivelled while still green. The fruit that ripened was plump, and of a good deep purple colour, with a fine bloom.

— LETTERS from Rome state that the very fine weather of the last ten days makes every one look gay again. As for the gardens they are blooming with Roses, and the Violets begin to scent the air. We wish our English weather would permit us to write in the same strain.

— THE gold-margined leaves of the variegated white Lily are now among the most striking objects in the flower-garden. The habit which the white Lily has of sending up its leaves in autumn makes this variegated form all the more valuable, as it appears in greatest beauty when all other variegated herbaceous plants have gone to rest.

— WE have received specimens of *Veronica Andersonii*, beautifully in flower, that were gathered on the 19th inst. from a plant in the open air in Messrs. Lane's Nursery, at Berkhamstead. In mild winters, this really pretty *Veronica* stands out of doors in all the warmer parts of England and Scotland; but when the winters are severe it generally gets killed. It is, therefore, safest to afford it some kind of protection, which it well deserves.

— FEW things could indicate the elasticity and recuperative power of the French people after a great calamity more than their prompt return to commercial activity, even in such apparent luxuries as new Roses. The seed beds of the great raisers in the vicinity of Paris must have suffered fearfully from the ravages of the late disastrous war, and yet we find their owners putting forth lists of new varieties as if their ordinary conditions had never been disturbed.

— THOSE who pay any attention to plants that do well in a dwelling-house in winter must not omit *Aralia japonica* (Sieboldi) from their selections, as it grows freely in winter, even when not near the windows or in a good light. It is, though often grown in the greenhouse, quite hardy, at least on warm soils. We saw about 10,000 plants of it at Young's Nursery at Godalming the other day—a proof that its merits are beginning to be appreciated, at least in some quarters.

— WE have received from Mr. Matthews, of Weston-super-mare, a basket of flowers—both flowers and basket being made of terra-cotta, and when set, as it is on an ebony pedestal and covered with a bell-glass, it forms an interesting drawing-room ornament. When we consider that every petal has to be made separately and then put together and arranged in the basket before being baked, this production must be regarded as a wonder in the way of modelling flowers in terra-cotta.

— WE are glad to learn that at a time when most kinds of labour is being better paid for than it hitherto has been, gardeners is some places are not overlooked. R. P. Long, Esq., of Rood Ashton, Wilts, has liberally increased the wages paid to men in his gardens three shillings per week. We may, therefore, now expect that Kew will soon stand alone in allowing its under-gardeners the miserable pittance of fourteen shillings a week!

— IN greenhouses handsome foliage in winter is almost as desirable as handsome flowers, and more especially is this the case after Christmas, when Hyacinths, Cyclamens, Chinese Primroses, forced shrubs, &c., are plentiful. *Pelargoniums* of the fine-foliaged sections furnish leaf-beauty of the highest order. Amongst them, however, none can compare in this respect with Mrs. Laing, a charming kind raised by Messrs. Downie, Laird, & Laing, and exhibited by them at the leading metropolitan shows this year, at each of which it was awarded first-class certificates, and also the first prize as the best of its kind at the late Birmingham Exhibition. Such honours of themselves confirm the fact that this fine variety is one of the very best in its class, and it is alike suitable for decoration in summer and winter.

ASPECTS OF VEGETATION.

AN AFRICAN LAKE.

In northern climes the lake is often a grim scene; dark and chilly and barren are the shores of many a Westmoreland lakelet; in Northern America, famed for its vegetation, barrenness is not so apparent; but the Pines often look as if chilled and stunted by the winter's wind. Here and there we have favoured spots like Killarney, the result of peculiarly favourable climatic conditions; but we have to go a long way south before lake-shore vegetation assumes anything like the character so gracefully depicted by the artist in the accompanying sketch. Although perhaps such scenes are not so interesting to the gardener as those in which Orchids, Palms, and his other favourite plants predominate, yet they are full of instruction for every one interested in ornamental gardening. We can never learn enough of the wondrously beautiful and varied aspects of Nature as she shows herself in



African Lake-shore Vegetation.

vegetation. The many debarred from the advantages of travel must to a large extent depend for their knowledge of Nature's aspects on the artist's skill, and as yet artists have not depicted a tithe of the known beauties of vegetation, while there are many fair regions where they have not as yet had the privilege of working. On a small scale in our hothouses we have already had the pleasure of seeing some of the charms of this water-born and water-haunting vegetation, as for example, at Glasnevin, Kew, and Oxford, in the tropical aquariums, and also in some private gardens and nurseries, as at Messrs. Veitch's. We doubt if any other aspect of hothouse vegetation has been so pleasing as the Lily-covered water, with its fringe of stately foliage and graceful embroidery of the shoots of *Cissus* and other climbing plants.

Bougainvillea Bracts.—We have just taken out of a drawer some of the bracts of the *Bougainvillea* gathered at Swindon two years ago, almost as bright in colour as the day they were gathered. As they keep so well, rarely such charming ornaments may be used for indoor decoration at all times.

THE INDOOR GARDEN.

COOL ORCHID GROWING.

WHEN Orchids were first imported into this country from tropical and subtropical regions, an idea that they all required excessive heat to grow them, appears to have been promulgated and accepted as gospel truth by horticulturists of all classes. To the earlier Orchid-growers it would appear to have been a matter of but little moment where a plant might have come from, or under what climatic conditions it grew in its native habitat. The Orchids under their management might come from the humid valleys of the Indian archipelago, the arid regions of South or Western Africa, the mountain chains of Mexico or Peru, or even the snow line of the towering Andes, but their treatment was the same, and they were placed in the hottest temperature at command, and even now the highest temperature often means the driest, and this was specially so under

the old flue system of heating. Under these adverse conditions we can hardly wonder that many of the newly imported Orchids died in a few months, more or less, after their introduction. Now and then, however, they produced a few flowers, often the last effort of expiring nature, and scarcely properly developed; still their delicate colours and grateful fragrance soon began to be spoken from mouth to mouth, as they flowered at intervals in the early collections. At one time it would be the celebrated Loddiges who would summons the savans and literati of the day to inspect some new wonder among the then marvellous "air plants." Then it would be at Chiswick in its palmy days, when, as the acknowledged head centre of horticulture, if not of fashion, everything ran smoothly as a marriage bell, while not unfrequently the then authorities at Kew had the indescribable pleasure of seeing one or other of these lovely plants unfold their delicate petals for the first time in Europe. Although a large proportion of the first, or early specimens, might now be considered but poor plants, still they attracted the notice of nearly everyone

interested in plants at the time, including the Duke of Devonshire and the celebrated Mrs. Lawrence, and they have rapidly risen in the estimation, not only of the professional horticulturist, but also of the general public ever since.

Those who invest in Orchids judiciously, and employ men of intelligence and skill to grow them, will receive good interest for their capital. In most cases their plants will increase in value, while the real and lasting pleasure which ever attends the mind capable of contemplating these living wonders, will amply repay any slight outlay on these the most beautiful of all plants. We would not be understood as implying that Orchids alone are worthy of culture, that they only can inspire the heart with kindly feelings and thankfulness. On the contrary, we argue that all plants are beautiful, all worthy of our respectful admiration, and we shall find that the more we understand of their cultural requirements and economy, the more we shall admire them as they one by one open their delicate flowers. All plants are beautiful—Orchids are superlatively so, and not by any means so difficult to cultivate as some would have us suppose. Still the old idea of excessive heat is rigidly adhered to by many, although we rarely find Orchids enjoying vigorous health in such places, while in the comparatively few places where cool Orchids are cultivated in real earnest, they may be found enjoying the most luxuriant health. The finest collections of *Odontogloss*, *Disas*, *Oncids*, and *Masdevallias* in this country have been subjected to a cool system or *régime* since their first introduction. This is a very important fact; for every Orchid grower knows that healthy imported plants are far better to deal with than such debilitated specimens as have been ruined by bad cultivation in a high and dry atmosphere. Although many Orchids grow well in a low mean temperature, still they require the atmosphere to be heavily charged with moisture, and the Sphagnum Moss on the pot tops should be as fresh and grow as freely as in its native swamps. Wherever, in our Orchid houses, we find Sphagnum and *Droseras* growing freely on the tops of the pots, we also, as a natural sequence, find the Orchids looking green and healthy. The reason of this coincidence is simply this—the *Droseras* and Sphagnum will only survive in a moist, moderately-shaded situation, and the shade and moisture requisite to keep them alive are also necessary to the vigorous health of the Orchids. The only reason why we cannot extend this rule is, that the Moss and *Droseras* do not absolutely require artificial heat, and the Orchids do for part of the year at least. Mr. Robert Warner, of Broomfield, has been very successful in his attempts at cool Orchid growing, and with him, as with others, the growth under this *régime* has been vigorous, producing great, plump, well-ripened pseudo bulbs, fine foliage, and abundance of finely-developed flowers.

A plant of *Odontoglossum Alexandræ* grown by Mr. James Anderson, at Meadowbank, produced a fine branched spike, bearing fifty-six flowers. This plant was grown along with many other *Odontogloss*, *Masdevallias*, &c., and has never been surpassed so far as flowering is concerned. Another remarkable instance occurred at Ferniehurst, the seat of E. Salt, Esq.; a plant of *Oncidium macranthum* produced a long flexuous branched spike bearing seventy-seven noble flowers. The house in which this plant is grown, along with half-a-dozen other plants of the same species, is kept very cool, the atmosphere is very moist, and the temperature not unfrequently descends as low as 38°, though as nearly as possible the mean winter temperature is 45°, that is 50° for the maximum and 40° for the minimum range.

Cool Orchid growing was long ago practised on the continent, for we find that in 1852 M. François Josst, gardener to Count Thun Hohenstein, at Tetschen, in Bohemia, grew several Orchids out of doors in a sheltered position. We will, however, let him relate his own mode of procedure:—

In 1852 I observed that some of the species did not flower well; and it then occurred to me to place them in the open air in the early part of July. The plants which I put out were *Brasavola glauca*, *Cymbidium marginatum*, *Cypripedium insigne*, *Dendrobium Pringianum*, *D. speciosum*, and *Lycaste Skinneri*. They grew perfectly, although in the morning the temperature was sometimes as low as 5° Reaumur (43° Fahr.). In the daytime the heat in the shade was often as high as 30° Reaumur (92° Fahr.). Tetschen is

subject to frequent changes of temperature; it is surrounded by mountains, and is in a valley along which the Elbe flows after receiving all the waters of Bohemia. I took the plants in at the end of August. After a short time flower-buds made their appearance, and a little while afterwards flowers followed in perfection. This good result led me to try the same experiment again on a larger scale; and I have since repeated it every year, until I am now in the habit of putting seventy-five species or varieties out into the air for three months in the year, viz., June, July, and August. What I do is this: I select a half-shady place, where I put some trunks of trees (Oaks), on which I place my baskets of Orchids. Between the trunks I plant Ferns, some *Philodendron pertusum*, *Tradescantia zehbrina* and *viridis*, and *Cissus marmorea*, so as to produce a pretty effect. In order to protect the plants against the scorching rays of the sun and very heavy rains, I cover the spot with canvas, but I endeavour to avoid too much shade, for I find that plants which are shaded too much never flower so well as others. I water in the ordinary way employed in hothouses. This year the temperature has several times fallen as low as 4° Reaumur (41° Fahr.), but the plants have not suffered in the least; they are even more vigorous; several of them actually flowered. These facts prove that many gardeners keep their Orchids and other exotics too hot. All plants require some period of rest in order to vegetate well. The following is a list of the Orchids which I treated in the way above described:—

<i>Barkeria spectabilis</i> , Batem.	<i>Lycaste superbiens</i> , Lindl.
<i>Brasavola glauca</i> , Lindl.	" <i>violacea</i> , Rehb. fil.
<i>Calanthe striata</i> , R. Br.	" <i>aromatica</i> , Lindl.
<i>Cattleya citrina</i> , Lindl.	" <i>Colleyi</i> , Lindl.
<i>Cælia macrostachya</i> , Lindl.	" <i>consobrina</i> , Rehb. fil.
<i>Cypripedium insigne</i> , Wall.	" <i>cruenta</i> , Lindl.
" " var. <i>parvi-</i>	" <i>Skinneri</i> , Lindl.
" " <i>florum</i> , Rehb. fil.	" " <i>var. alba</i> , Hort.
<i>Dendrobium calamiforme</i> , Lodd.	" " <i>var. latimaculata</i> , Hort.
" <i>Jenkinsii</i> , Wall.	" " <i>var. leucochila</i> , Hort.
" <i>Pringianum</i> , Bidw.	" " <i>var. picta</i> , Hort.
" <i>speciosum</i> , Sm.	<i>Maxillaria cucullata</i> , Lindl.
<i>Epidendrum Candollei</i> , Lindl.	" <i>tenuifolia</i> , Lindl.
" <i>cochleatum</i> , L.	<i>Odontoglossum bitionense</i> , Lindl.
" <i>diffusum</i> , Sw.	" <i>citrosimum</i> , Lindl.
" <i>falcatum</i> , Lindl.	" <i>Cervantesii</i> , Llave.
" <i>radiatum</i> , Lindl.	" <i>grande</i> , Lindl.
" <i>selligerum</i> , Batem.	" <i>Iusleyi</i> , Lindl.
" <i>Skinneri</i> , Batem.	" <i>læve</i> , Lindl.
" <i>Stamfordianum</i> , Batem.	" <i>nebulosum</i> , Lindl.
" <i>varicosum</i> , Batem.	" <i>pulchellum</i> , Batem.
" <i>virgatum</i> , Lindl.	" " <i>var. grandiflorum</i> , Hort.
" <i>vitellinum</i> , Lindl.	<i>Oncidium bicallosum</i> , Lindl.
<i>Gongora galeata</i> , Rehb. fil.	" <i>filipes</i> , Lindl.
" <i>Batemani</i> , Rehb. fil.	" <i>leucochilum</i> , Batem.
" <i>luteola</i> , Rehb. fil.	" <i>microchilum</i> , Batem.
<i>Lælia acuminata</i> , Lindl.	" <i>sphaacelatum</i> , Lindl.
" <i>albida</i> , Batem.	" <i>suave</i> , Lindl.
" <i>anceps</i> , Lindl.	<i>Sobralia decora</i> , Batem.
" " var. <i>Barkeriana</i> , Hort.	" <i>dichotoma</i> , R. et. Pav.
" " var. <i>superba</i> , Hort.	" <i>Liliastrum</i> , Lindl.
" <i>autumnalis</i> , Lindl.	" <i>macrantha</i> , Lindl.
" <i>candida</i> , Hort.	" <i>violacea</i> , Lindl.
" <i>furfuracea</i> , Lindl.	<i>Stanhopea conuata</i> , Rehb. fil.
" <i>Galeottiana</i> , Morren.	<i>Trichopilia tortilis</i> , Lindl.
<i>Lycaste majalis</i> , Lindl.	" " var. <i>pallida</i> , Hort.
" <i>rubescens</i> , Lodd.	

Although, as is proved by the above collection, many Orchids will grow well in a low, moist temperature, or even out of doors, still it is essentially requisite that a proper selection be made of those genera and species which are amenable to cool treatment, or very disastrous results may follow its adoption. No one would for a moment imagine that the *Phalaenopsids*, *Aerides*, *Vandas*, and *Dendrobes* from the low-lying humid tropical regions could be successfully grown in the very cool and moist temperature so highly recommended as suitable for *Odontogloss* and the cooler *Oncids*. Nor can the last-mentioned endure the dry resting period so essential to most of the tropical *Dendrobes*. Some growers may argue that these plants, *i. e.*, *Odontogloss* for example, do not come from a cool temperature. We can well afford to allow them their own preconceived ideas on the subject, while we maintain that in this country they may be grown in a cool, moist atmosphere as well, and even better than they have been grown in the high temperature they recommend. I contend that it matters but little what the natural temperature of their native habitats may be; if they succeed well with us here in a much cooler one so much the better. It is a great mistake to use fire heat when it is not required. In the first place it is unnatural even when

mollified as much as is practicable by moisture. Secondly, it is a source of trouble, annoyance, and expense both to the gardener and his employer, and I am well satisfied that a great number of really beautiful Orchids will succeed perfectly well without any fire-heat at all during summer, while during the winter months its use may be reduced to a minimum, by carefully using covering material for the houses, as mats either of reeds, straw, or bark. I would not be understood as ignoring altogether the valuable information afforded us by collectors and travellers respecting the natural conditions in which plants grow abroad, since that knowledge guides us in our treatment to a certain extent, though it would not in all cases be desirable, even were it possible, to follow out to the letter the natural conditions and surroundings under which the plants are found to exist or luxuriate, as the case may be, in their native habitats. For example, some of the Moulmein Dendrobies are scorched and shrivelled up during the dry season of the year; but it does not follow that they are benefited thereby, any more than are our lawns and pastures by the scorching heat of our own summer season, added to a lack of moisture. In our artificial treatment of Orchids we can supply them with moisture in unlimited quantities, and we are able to keep a high temperature for those that require it; but the third great essential is not so much at our disposal. I allude to light, which fortunately is not quite so essential for cool Orchids as for the Indian Dendrobies, Phalenopsids, &c. Lieut.-Colonel Benson tells us that the flowers produced on our Dendrobiums here at home are deficient in colour and brightness; this no doubt is the result of our comparatively dull, cloudy atmosphere.

F. W. BURBIDGE.

(To be continued.)

BEGONIAS FOR WINTER FLOWERING.

PERMIT me to add a few old and valuable varieties to the list of Begonias given at page 400, and also to make a note or two on some of the kinds there named. I find that Begonia Pearcei is stated to be "a most desirable plant," an opinion in which I heartily concur. It is one of the most valuable of Begonias for winter decoration, either for vases or bouquets; its leaves and flowers together quite furnish a vase with a richness and variety that scarcely any plant can excel. We have but few flowers of the same colour, viz., a rich light creamy yellow, contrasting admirably with the peculiarly rich green, veined, velvety leaves. The flowers, too, stand up on slender stems, well above the foliage, and continue opening in succession for several months. It, however, likes more heat than some kinds, and does best in a stove or warm sitting-room. Mounted singly, the flowers are almost the only yellow that can be used in bouquets. Near dark Heliotropes, Plumbago capensis, and Bougainvilleas, they give a bouquet a charming auriferous brightness. The smaller leaves also help to make a good finish. Altogether no one having flowers to cut or vases to fill can be overdone with Begonia Pearcei. The old Begonias, nitida and Weltoniensis, are well-known and valuable varieties as winter flowerers. B. Boliviensis, Sedeni, Chelsoni, and Veitchii, may be set down more as summer bloomers. The two first are especially useful for cutting, the long flowers being very striking against silver vases, either on plants or in the form of cut pendent sprays. For winter flowering, however, perhaps no Begonia could be more useful than B. insignis, a very old pink pendent flowerer. B. Saundersii or Lugramii are kinds that almost every one at one time used to know and grow. None of these can be dispensed with where exquisite pink blooms are in demand, and the crops of flowers which they yield are marvellous. In the case of these, one may cut and come again almost daily, and the length of time during which the plants stand in pots or vases extends through the four or five most flowerless months of the year, viz., from November to March. These old sorts are best propagated afresh every year. Put in cuttings of them in March; grow them on and flower them in not more than 32-sized pots, and perhaps 48's would even be better still. A row of them, set on a shelf near the glass, will yield any amount of blooms. In fact, the

plants are all blossom or buds, which are just about as effective and stand longer. One of the very best of the Rex hybrids, though widely different in form, size, and shape from B. Rex, is B. erecta multiflora, a beautiful free-flowering pretty variety, both leaves and flowers being highly ornamental. B. parviflora, too, grown afresh every year, and in small pots, may be timed to come in in winter, when it will be found to form a most exquisite white fringe for bouquets, and B. Richardsoni, a deeply-cut leaved variety, is a decided improvement on parviflora, and seems a more decided and profuse winter-bloomer. It is a charming little sort, sent out, I think, by the Royal Horticultural Society. These are all eminently worthy of being added to the excellent list already given.

D. T. FISH.

DRACÆNA TERMINALIS.

DRACÆNAS rank amongst the most beautiful and useful of fine-leaved plants. In a large or small state they are alike elegant and attractive. They require stove heat in winter,



Dracæna terminalis.

but will stand in the conservatory or in a cool house from the beginning of June to the end of September, after which time they should be transferred to warmer quarters. I am, of course, alluding to such species as are usually classed as stove plants; among these D. terminalis, although not so recently introduced as many others, is nevertheless little inferior in point of beauty to any of them, the vivid colouring of its leaves rendering it at all times attractive. In a small state it is extremely interesting, and it harmonizes well with other plants, more especially with Ferns, or with others of even more sombre aspect. It may be increased either from root-cuttings or by means of short pieces of the stem on which there is an eye or two; or if increase is desired without heading the plant down, turn it out of the pot, and on the extremity of the main root will be found a stout bud extending in a downward direction, and emitting numerous small fibrous roots as it descends; cut about an inch and an half off this root with the small fibres attached, and plant the portion removed in a mixture of sand and peat in equal proportions, leaving the bud, or what has been the extremity of the root, just above the surface of the soil; it will then quickly emit

leaves, and form itself into a plant. Although, as I have stated, this *Dracaena* will stand a comparatively low temperature in summer, it nevertheless enjoys a high temperature, and thrives best in the stove, where it can receive 70° night temperature, with a rise of 10° or 15° during the day. As to soil, it likes an admixture of equal parts turfy loam and peat, with one-fifth silver sand, and it should be slightly shaded during bright sunny weather. It should also be syringed overhead in the evenings, getting the water well on to the undersides of the leaves, as the plant is liable to the attacks of red spider, which by this means can be kept in check.

T. BAINES.

NEAPOLITAN VIOLETS.

Few flowers are more prized than these, and to have them in bloom during the autumn and dull winter months should be the aim of every cultivator. We gathered our first blooms of these Violets this season on the 12th of October, and they still continue to yield their flowers by the hundred almost every day. In April we take them up out of the frames in which they have been wintered and part them; the strongest crowns are stripped of all offsets and runners and are planted on a good rich north border about 8 inches apart, where they remain until September. During the summer the ground is kept clear of weeds; its surface is loosened up and it is well supplied with water when required. And after the plants have got well established they receive twice or thrice a good watering with manure water. All runners are clipped off them as they appear, for allowing them to grow would ruin the plants for flowering in winter. By September they begin to show bloom, and should then be taken up and planted in their winter quarters as soon as possible. Any cold pit or frame that is a little sheltered, and which gets all the benefit possible from the sun, will do. The pit is filled with stable litter to within 6 inches of the top, a space which is filled with soil from an old Melon bed. The plants are then carefully taken up and planted sufficiently far apart to be clear of one another. When all are planted give them a gentle watering, to settle the soil about their roots; leave them exposed night and day for a week or so, when they should receive another good watering; and then the surface should be covered with cocoa-nut fibre, which not only keeps the bloom and leaves clean, but prevents the soil from getting dry. By the time all is finished the heds will have sunk low enough to get the lights on, which should be tilted on the lee side. Violets ought never to be kept close except during very severe weather, when a little protection will be required for the open flowers. Air should, however, be given them on all favourable opportunities.

W. W. H.

SOLANUM JASMINOIDES.

I CAN confirm all that Mr. Charles McDonald, of the Phoenix Park, Dublin, says about this plant. The white has a dash of purple in it, that dash being more or less decided according as the plant is grown in the full light or partial shade; very much shaded under glass, it may be called white. Out of doors and full in the sun, it is certainly purplish. I do not think there are two varieties of it. At all events any one variety will run through all these changes of colour, according to circumstances. I have grown the plant for many years as a conservatory climber, a position in which its flowers were always white, although they could never appear in the same bouquet with those of *Mandevilla suaveolens*. It happened, however, that a few branches of the plant rambled out through an opening in summer, and ran along outside the roof, on which they flowered freely, but the blossoms were of a strong purplish tint. I have not found this plant to be wholly hardy in England. It is, however, very nearly hardy, and forms a grand object on a conservative wall. It is a charming flower, but it has one drawback, viz., the smell, which is even stronger than that of bruised Potato tops. For this reason, if to be put in bouquets, it should be carefully handled and mounted without bruising, no leaves being used, and only a minimum of flower-stalk. Either Violets or *Heliotropes*, *Francisceas*, *Gardenias*, or bits of *Stephanotis* or *Hyacinths* in the same

bouquet will neutralize the *Solanum* odour, and this same object may also be attained by fringing round or intermixing it with Lemon or Nutmeg-scented *Geranium* or Sweet *Verbena*.

D. BURY.

ASPECT FOR A CONSERVATORY.

I HAVE often heard the remark, "I would build a conservatory, but have no proper place for one," meaning no south aspect. Now, however right it may be to build fruit-houses with an aspect direct south, I think it is the worst possible one for a conservatory. In the first place it certainly does not add to the pleasure of any one looking at plants in a glass-house to be exposed to a hot sun, and still less to those working amongst them. Then again, flowers, even when shaded by blinds, soon drop their petals in such a house, and many plants, as *Camellias*, *Ferns*, &c., seldom do well, however shaded. About two years ago, I built a house 100 feet long, with an aspect due north, and a high back wall about 10 feet. This house has been full of zonal *Geraniums* which have been in bloom ever since last April, and have been the admiration of all who have seen them; and though it is now November, and they have been blooming more than half a year, they are still in full beauty. The question is, Would they have done so well in a house facing the south? I think not; though perhaps such a house would suit them better during winter. If such sun-loving plants as *Geraniums* will do well in a north house, there are but few plants which could not be cultivated in it. Were I to build a *Camellia* house, I would face it to the north-east, so as to avoid the afternoon sun even, as few plants dislike a hot sun more than *Camellias* do. Some may, therefore, be glad to know that a south aspect is not necessary for every kind of glass house.

Chilwell.

J. R. PEARSON.

ORCHIDS IN BLOOM AT MEADOWBANK.

THE following list shows what may be had in bloom in a good collection at this, the dullest floral season of the year.

<i>Aerides</i> suavissimum	<i>Dendrobium</i> pretty white flowered sp.	<i>Oncidium</i> <i>Krameri</i>	<i>Odontoglossum</i> <i>Bictontense</i>
<i>Ansellia</i> <i>africana</i>	in way of sulcatum	<i>Papilio</i> fuscatum	<i>Polystachya</i> pubescens
<i>Anaëctochilus</i> Dawsonii	<i>Epidendrum</i> triadenum	<i>pulvinatum</i> ornithorhynchum	<i>Phalenopsis</i> amabilis
<i>Burlingtodia</i> decora	<i>vitellinum</i>	<i>chum grandiflorum</i>	<i>Pleione</i> lagenaria
<i>Cattleya</i> luteola	<i>Helcia</i> sanguinolenta	<i>Barkeri</i> cruentum	<i>maculata</i> Wallichi
<i>marginata</i> exoniensis	<i>Laelia</i> crispa-labia	<i>verrucosum</i> flexuosum	<i>Sophronitis</i> coccinea
<i>labiata</i>	syn. <i>Lawrenceana</i>	<i>Rogersi</i> calanthum	<i>Saccolabium</i> violaceum
<i>Pescatorei</i>	<i>Perriniana</i> vars	<i>Lanceanum</i> crispum	<i>grandiflorum</i> Sarcocidius sp.
<i>Cypripedium</i> Fairrieanum	<i>autumnalis</i>	<i>furcatum</i> obyzatum	<i>Sarcocidius</i> lavis
<i>purpuratum</i> Harrisianum	<i>puncta-striata</i> picta	<i>incurvum</i> reflexum	<i>Trichopilia</i> laxa
<i>longifolium</i> insigne	<i>venusta</i>	<i>Batemani</i>	<i>Vanda</i> tricolor vars.
<i>Maulei</i>	<i>Mesospidium</i> sanguineum	<i>Odontoglossum</i> Dawsonianum	<i>Warrea</i> Lindeniana
<i>Calanthe</i> verticifolia	<i>Masdevallia</i> tovenensis	<i>Insleyi</i> grande	<i>Warsceviczella</i> quadrata
<i>Veitohii</i> Masuca	<i>ignea</i> infracta	<i>cristatum</i> pulchellum	<i>discolor</i> Zygopetalum
<i>vestita</i>	<i>Miltonia</i> Moreliana	<i>Uro-Skimneri</i> Alexandre	<i>Mackayi</i> Wallisii
<i>Coccyne</i> speciosa	<i>Oncidium</i> hematochilum	<i>cordatum</i>	
<i>Dendrobium</i> triadenum			

Botanic Garden, Glasgow.

R. BULLEN.

Prolific Seeding.—It has been calculated that one plant of the red Poppy bears 50,000 seeds; one Sow-thistle, 19,000; one Corn-cockle, 2,590, the Charlock, 4,000; and the black Mustard, 1,200. The old gardening books recommended any person who entered a garden to pull up whatever weed he saw near him. What a blessing it is to take a handful of any of the above! It is worth remembering, too, by the lover of canaries that every time his pet eats a Groundsel, it destroys at least 6,500 possible Groundsels of the future—that is, supposing each of these seedlings to take up 2 square inches, it prevents some 10 square yards of ground from being carpeted with this weed. If he is a benefactor of his race who causes two blades of grass to grow where but one formerly flourished, the man who pulls up only one weed has far more claims on our respect. He sets free a large space of land for useful cultivation.

THE ARBORETUM.

HARDY TREES AND SHRUBS.

BY GEORGE GORDON, A.L.S.

THE ITALIAN MAPLE (ACER OPALUS).

This forms a low, branching, tufted tree, which varies in height from 15 to 30 feet, according to the soil and situation in which it is planted, and comes later into leaf in the spring than most of the other kinds. It is a native of Italy and Naples, particularly about Rome. It is also found in the



Full-sized Leaf.

forests, and on the mountains of Corsica, and on the Sierra Nevada in Spain. It was first introduced in 1752. The leaves are below the middle size, somewhat coriaceous and rounded in outline, more or less heart-shaped at the base, and five-lobed; they are deep green above, somewhat glaucous beneath, quite smooth on both surfaces, and on long, slender, reddish footstalks; just before they fall off in the autumn, they turn a yellowish-brown, sometimes tinged with red; the lobes are not very deeply divided, generally obtuse, but sometimes a little



Full-sized Fruit.

pointed, and all are irregularly and coarsely toothed on the edges. The flowers are small, whitish, and are produced in drooping corymbs in the end of May. The fruit or keys are small, quite smooth, and of a reddish colour before ripening, and with round, swelled carpels, and narrow spatulate wings, which are rather diverging. The Italian Maple forms a nice small tree for planting singly on the lawn. The length of a full-sized leaf is 5 inches, including the footstalk, which is $2\frac{1}{2}$ inches long, and the breadth of the leaf is $3\frac{1}{4}$ inches.

Variegated Douglas Fir.—I saw the parent plant of this recently at Castle Kennedy, where it was raised by Mr. Fowler, the

Earl of Stair's talented gardener, of Grape-growing notoriety. It is a strikingly beautiful tree, even in the autumn, but far more so in the spring, when it is a veritable silver, indeed almost a pure white species. This, unlike some so-called variegations, is not the result of weakness or delicacy of constitution. I had the opportunity of examining some hundreds of these beautiful trees, which in hardness, rapidity of growth, and vigour of constitution seem to equal their green parent. There can be little doubt that a brilliant future is in store for this Silver Spruce in our woods and landscapes. It is impossible to conceive anything more novel and charming than a free-growing Spruce with young shoots almost as white as the Acer Negundo variegatum. It is named Abies Douglasii Stairii, and will probably soon be in the trade, as the noble Earl whose name it bears, with his usual generosity, has made a present of it to Mr. Fowler, to whom is due the credit of raising and propagating it. It seems to have no tendency to reversion; the entire stock of grafted plants is perfectly true to the original.—F.

ELIZABETHAN GARDENING.

"ANCIENT" gardening, as London calls all English gardening prior to the Revolution, still labours under the ban which tabooed Gothic architecture in the last century. It is regarded as simple barbarism, without rules, laws, or ordinances of any kind; the mere outbreak of "a diseased imagination." The popular belief is, that there was really no style of gardening worthy of study, much less of imitation, prior to the Revolution. It is generally believed that William III. introduced gardening into England, in the form which is, from him, called the "Dutch" style; that is, quaint figures of temples, vases, statues, animals, &c., in "topiary work," with formal canals, and broad straight walks, bordered by walls of cut foliage; that the excess to which this taste was carried led, in the first quarter of the 18th century, to a directly opposite style—the "Natural" or "English" style, in which the grounds were to be reduced to a wilderness, and a vain attempt made to imitate the wild luxuriance and easy grace of Nature. [With our present knowledge and present rich collections of plants we can readily command the "easy grace" of nature in our gardens.] And this has yielded partially to the modern style—a modification of the French and Italian styles.

But the truth is, that all these styles had been long previously practised in this country. In the reign of Henry VIII., the gardens of Nonsuch House were laid out in the Italian style, with columns and pyramids of marble, statues, vases, fountains, &c. In the same reign, Leland, in his "Itinerary" (p. 60), describes the gardens at "Wrexhill Castle, in Yorkshire," as containing "mountes, opere topiariis, writhen aboute with degrees like cokill-shells to com to the top without payn,"—in what is now called the "Dutch" style. Examples of this style, much older than the time of the stern Dutchman, still remain attached to old mansions. At Packwood, near Knowle, in Warwickshire, there is a "mount writhen with degrees like cokill-shells," and planted with Yews, which is probably quite as old as that so quaintly described by Leland. Three-quarters of a century before the alleged introduction of the "Dutch" style, Lord Bacon, in his "Essay on Gardening," had advocated the natural style in preference to "images cut in Juniper or other garden stuff, knots or figures, with divers coloured earths—they are but toys—they are for children." And, before the end of the 16th century, Spenser had described the "English" or "Natural" style, with much beauty, in passages in the "Faerie Queene," adapted from Tasso:—

There the most dainty paradise on ground
Itself doth offer to his sober eye,
In which all pleasures plenteously abound,
And none does others' happiness envy;
The painted flowers; the trees upshooting high;
The dales for shade; the hills for breathing space;
The trembling groves; the crystal running by;
And, that which all fair works doth most agrace,
The Art, which all that wrought, appeared in no place.

It has been frequently said that Milton's description of Paradise was instrumental in introducing the Natural style; but if so, it could only be by a misapprehension of what he says. In his description of what may be called "the open country," of Paradise, "hill, and dale, and plain," he lauds it as not planted by "nice art, in beds and curious knots;" but it by no means follows that he was opposed to visible art in the garden, any more than Spenser, because he describes the art as concealed in the seductive Bower of Bliss, which was spread as a trap for the Knight of Temperance. On the contrary, Milton describes the "blissful bower" of our first parents as fashioned by Divine art; and his words are carefully selected to convey an idea of the art which perfects man's abode. The roof is *inwoven shade, fenced up by a verdant wall; flowers wrought*

Mosaic and with *rich inlay broider'd* the ground. How elaborately the passage is phrased to exhibit art; and how carefully the poet distinguishes between the home of man, where art should be visible, and the wild range of nature, where art has no place.

In fact, the English have always loved gardens; and it is impossible to fix a date when gardening was not practised as an art. The Romans had their gardens in Britain, and introduced many useful and ornamental plants. Every Saxon gentleman had his "garth" for pleasure, and his ort-garth (orchard for vegetables); and, under the Norman Kings (temp. Henry II.), the citizens of London had gardens to their villas, "large, beautiful, and planted with various kinds of trees."

It would be possible to trace some of the alleged modern styles of gardening to a much earlier date; for it is quite certain that the Dutch style, with cut trees, straight avenues, and canal-like ponds, prevailed in Egypt; that the "Natural," or "English" style was preferred at Babylon; for the celebrated hanging gardens made by Nebuchadnezzar for his Queen Anytis, were laid out to imitate the mountains and natural scenery of her native country, Media; and the sculptures represent similar gardens at a still earlier date in Assyria. But we have no intention of entering into so pedantic an inquiry, or we might literally travel to China and Peru for further illustrations.

Various circumstances contributed to give an impetus to a taste for flowers and ornamental gardening during the reign of Elizabeth. Among these may be enumerated the extended intercourse with other countries; the improved condition of the middle classes; the security and internal peace of the kingdom; and the immigration from the Low Countries of the persecuted Huguenots, who brought with them the cultivated flowers for which Holland was already celebrated. Many of the great London merchants—as Master James Cole, John Tradescant, and Mr. Nicholas Lete, "a worthy merchant and lover of all fair flowers,"—interested themselves to procure new plants from their correspondents in distant countries; and some of them even sent out, at their own expense, persons especially commissioned to seek out and bring home rare and curious plants both from the far east, and from America. These efforts were attended with so much success, that at the beginning of the 17th century the English flower garden was stocked with a much greater variety of flowers for all seasons than is usually found in the best gardens cultivated in the fashion of the present day.

The botanical works of the period were chiefly Herbals, which, from their number, seem to have been very popular; but this was probably rather on account of their medical information than for their botanical or horticultural uses; for mankind seems to have a natural love for amateur dosing and domestic quackery. Several works, however, on gardening as an art, were published during the reign of Elizabeth; among others the "Gardener's Labyrinth;" containing a "Discourse of the Gardener's Life, in the yearly travails to be bestowed on the plot of earth, for the use of a garden; wherein are set forth divers herbes, knottes, and mazes, cunningly handled for the beautifying of gardens, &c." Soon afterwards the same author published a second part on the kitchen garden. Similar guides to the art of gardening were published by Sir Hugh Platt, Thomas Hyll, William Lawson, and others. The most copious work, however, and one which contains as much useful information as most books on gardening of the present day, was the "Paradisi in Sole, Paradisus Terrestris," by John Parkinson. It was not published till 1629; but Parkinson—who was born in 1567, three years later than Shakspeare—may be fairly classed among Elizabethan authors. These works indicate that gardening was at this period a popular amusement, and that the amateur was seeking information and instruction in his favourite pursuit.

The favourite style for the "Garden of Flowers" attached to the house of the proprietor, which prevailed in the time of Elizabeth, was that which Shakspeare succinctly but fully describes in three words, the "curious knotted garden" ("Love's Labour's Lost," Act I. scene 1), composed of "forthrights"—straight walks—with knots, "meanders and mazes"—geometric beds, filling the intersections. The knots and mazes consisted of flower beds divided by gravel walks edged with Box, Thrift, Thyme, and other low-growing plants; or with stone, slate, tiles, &c. The pattern was strictly geometric, stiff, and formal, like the patterns of Arabic tracery; but withal very well adapted for filling in with harmonious colouring. The gardening books of the period generally give elaborate patterns for laying out gardens in this style; though, as Parkinson says, "it would be almost endless to express so many as might be conceived and set down, for that every man may invent others far differing from these, or any other that can be set forth." Topiary-work was added to the parterre; and being executed in evergreen shrubs, helped to give interest to the garden even in the winter. Sometimes, perhaps, more quaint and less formal patterns were adopted; and

probably Giles Fletcher's description of a garden cut like a lady fair was copied from actual observation:—

The garden like a lady fair was cut,
That lay as if she slumber'd in delight,
And to the open skies her eyes did shut.

* * * *

Upon a hilly bank her head she cast,
On which the bower of vain-delight was built;
White and red Roses for her face were placed.
And for her tresses Marigolds were split.

In order to bring the garden into harmony with the building, and make it, as it were, part thereof, a long, broad terrace—in more stately mansions—ran along the private front of the house, and commanded a view of the whole design. Broad flights of steps connected the garden with the terrace, and thence the principal walks diverged in straight lines, which were intersected by similar walks parallel to the terrace. These walks—broad, and gravelled or turfed—formed the main lines of the design; the intermediate parallelograms were filled up with "the meanders or mazes," the "beds and curious knots," or with labyrinths, shrubberies, and orchards, or Grass plots. Thus a uniform plan, harmonising and answering to every feature of the house, was presented. The forthrights of the garden corresponded to the ground plan of the building, and the mazes or knots to its ornamental details, its pillars, friezes, mullions, and carved capitals. The peculiar geometric tracery which surmounts so many Elizabethan buildings very closely corresponds to the geometric beds of our Elizabethan gardens.

The gardener of the period was not inattentive to the importance of producing a rich effect of colour in his garden. His practice was to mix and blend the colours of the flowers in one rich mass of various hues, "as Nature does herself" in her wild banks, meers, and woodlands. This necessarily ensued from the beds being planted with various flowers to succeed each other at different seasons:—

As in a rainbow's many-coloured hue,
Here see we watchet deepen'd with a blue;
There a dark tawny, with a purple mix'd;
Yellow and flame, with streaks of green betwixt;
A bloody stream into a blushing run,
And end still with the colour which begun;
Drawing the deeper to a lighter strain,
Bringing the lightest to the deepest again;
With such rare art each mingled with his fellow,
The blue with watchet, green and red with yellow;
Like to the changes which we daily see
Around the dove's neck with variety;
Where none can say (though he it strict attends),
Here one begins, and there the other ends.
Using such cunning as they did dispose
The ruddy Piony with the lighter Rose,
The Monkshood with the Buglos, and entwine
The white, the blue, the flesh-like Columbine
With Pinks, Sweet Williams; that far off the eye
Could not the manner of their mixture spy.

W. Browne.

In the mingling of colours here indicated lies the secret of all purely ornamental, as distinguished from pictorial, colouring:—

Where none can say (though he it strict attends),
Here one begins, and there the other ends.

This is true colouring: a harmonious blending of tints softening and subduing each other; not violent contrasts, rendering each other more violent, harsh, and glaring. Here we have light blue (watchet) deepened by dark blue; a dull tawny brightened with a purple; yellow and flame cooled by streaks of green. This mode of intimately mixing colours so as to make them blend is quite different from the modern fashion of separating them to make them contrast, by planting separate beds of distinct flowers—great patches of one colour here and another colour there—like the patches on a harlequin's jacket, and on the whole about as picturesque and interesting; and certainly directed to the same end, viz., to please the vulgar taste for coarse colours. Beds of flowers planted in this manner can never be made to produce a harmonious effect, unless you go to an eminence half a mile off to survey your garden. What we ought to imitate—if we adopt an artificial standard—is the rich colouring and intermixture of warm and cool tints in a Persian carpet, and not the violent hues and vulgar blaze of the French carpet weaver. Of course more was left to Nature than the modern gardener trusts to her care. As the primary object was to have a succession of flowers during the year, it was impossible to arrange them for mutual effect as to colour. The contrast and harmonies of one month would be deranged in the next, and any attempt to produce determinate effects would be rendered futile as one flower succeeded another. The chief attention in planting was given to bringing all the flowers well into

view by placing them with regard to their respective heights and sizes, and the colours were left to blend themselves as—

Tapettes (tapestry) that Nature
Had made herself.—*Chaucer.*

The Elizabethan gardener had no fear but that if flowers were varied and plentiful enough their colours would blend with quite as much beauty as in any artificial arrangement which he could devise. He had seen how Nature blends her colours on the river bank or the woodside, in the open meadow, or the upland path, and he was quite satisfied to let her dispose his colours in like manner. And this he might safely do; for the colours which he had to use, being natural to a temperate climate, and not tropical exotics dragged from their blazing home, were soft and harmonious; and whatever their arrangement, were sure to produce a satisfactory result. The best artificial guide to colour arrangement which the gardener can have is the varied play of light which passes through the glass of an ancient painted window, seen from a distance; where the pattern cannot be deciphered, but only a rich mass of colouring perceived. Probably the nearest approach which European art has made towards pure taste in the use of bright colours is in the old glass which adorns some of our cathedrals and parish churches. The reason for this success is that subject was made subordinate to colour; and the painter rather sought to produce a rich assemblage of colours than to execute a picture better suited to an opaque surface. He felt that he had to deal with the richest colours which human art could produce, and it was his aim to do justice to the means at his disposal, and not to display his skill as a draughtsman.

In dealing with flowers, however, we have this superior facility: that while artificial colours require artificial treatment, and demand attention to certain rules as to their juxtaposition, Nature's colours always harmonise, if placed near enough together, and we need never be afraid to give them almost any arrangement we please, or in fact—which is better—leave them to take any arrangement which they may happen to fall into. It is a rule, for instance, not to oppose blue and red, and not to ally blue and green; but in a garden we may constantly see these colours blend together in perfect harmony, and with the richest effect, in spite of all our artificial rules. What, for instance, can be more exquisite, in the spring, than a bed of Anemones of every possible colour? or, in the autumn, than a mixed mass of German Asters in all their varied hues? What a rich mosaic is a bed of Hyacinths, Tulips, or Pansies; and how exquisitely their various tints weave what Shakspeare calls "a rich scarf for the proud earth." It is in this blending of colours that the painting of Nature so far transcends all that man can do; and this is a secret which the modern præ-Raphaelite has yet to learn, viz., that Nature does not pick out her colours or forms in separate bits—here a bit of scarlet, there a bit of blue, and there a bit of green; here a leaf, and there a pebble; but she blends them all in one rich whole, so that with the strictest attention "we cannot the manner of their mixture spy."

(To be continued.)

AUTUMN FLOWERS.

BY MRS. M. A. BAINES.

WELCOME, sweet flow'rs, twice welcome now the year
Is waning fast, and few delights are left
For those pure souls who cherish Nature's gifts;
Who love to wander at the sunset hour
In search of mossy banks and flow'ry dells,
Which none save fairy feet have touched before.

Such joys are past! Sweet Spring-time came and went,
It brought us tender flow'rs that quickly died,
As if to teach a lesson to mankind,
And show how swiftly earthly joys pass by.
Then came the summer, gorgeous for awhile,
Bestowing fruit and flow'rs with lavish hand.

Next, Autumn does appear, while yet the glow
Of Summer still remains, and gilds the scene:
Just like dissolving views, which do so blend,
And take each other's place, that none can say
Where that one ended, and where this began.

But Autumn now is reigning, and its flow'rs
Are beauteous emblems of a love divine,
Adapting all things to conditions found;
Thus, rarest flowers linger with us long,
As if to make amends for being scarce,
And likewise recompense our tender care.
They do not droop, and fade, and die so soon
As fragile flow'rs are wont, that come in Spring,
Nor like the summer Rose, which blooms and fades,
(Because it shrinks from Sol's too ardent gaze),
Radiant at midday, and at eve is dead!

PUBLIC GARDENS.

PUBLIC GARDENS IN FLORENCE.

For a long distance along the southern bank of the river, stretching up stream—west from that delightful Ponte Vecchio, the Jewellers' Bridge, which, it is to be hoped, will never be Haussmannized—a line of mean old buildings, not without a certain picturesqueness, but very dirty and tumble-down, rose out of the muddy bed of the Arno. The greater part of these have been cleared away, and have made room for a spacious quay and a range of new houses extending beyond the Ponte Alle Grazie, near to which some pretty parterres have been laid out around a monument to the memory of Prince Nicholas Demidoff, a gift to the city from his son, the well-known owner of the superb collection of works of art, the sale of which, in 1870, he survived but a few hours. Prince Nicholas inhabited the Serristori Palace, at a short distance from the garden, and is well remembered for his works of charity and promotion of education in that district of Florence. These public gardens have become a feature in Florence, where the streets and squares, only a few years ago, were utterly destitute of foliage and flowers. The great Piazza dell'Indipendenza, which dates from the reign of the last Grand Duke, was for years a dreary expanse of flag-stones and dust, scorching hot in summer, swept in winter by the chilling blasts of the *tramontana*—a dreary and most undesirable residence. It has now been quite recently planted with a double row of trees, extending all round it, and which, it is to be hoped, will in time enclose a garden. In the Piazza San Marco, a garden now surrounds a statue of General Fanti, the political exile, who, in company with Cialdini, Cacciari, and others, fought through the civil war in Spain, and returned to Italy to play a prominent part in his own country's struggles for independence. The Piazza San Spirito, on the south side of the Arno, and previously the most unattractive and the least frequented of the larger Florentine squares, has been quite transformed by the creation of a large garden in its centre, and is inferior in that respect only to the Piazza d'Azeglio, in the new quarter of the Maglio. This last is really a triumph of urban gardening. Only about four years ago nothing could be more dreary in appearance than that square. The garden was laid out, but the iron railings surrounding it were much more conspicuous than the saplings and small bushes which rose from among the unbroken clods the plough had left. It was a melancholy looking place, to which even the bright sun of Florence could scarcely impart an air of cheerfulness. Wonderful is the change since then. There are squares in London which have been planted scores of years that do not make so good a show. In fact, hardly any of them can give an idea of it. It already possesses dense and lofty masses of foliage, in the midst of which one loses sight of the town. Probably trees and shrubs of speedy growth were selected, but it is strong testimony to the excellence of the Florentine soil and climate that they should thus have thriven.

DR. HOOKER AND THE TREASURY.

Royal Gardens, Kew, February 22, 1869.

SIR,—With reference to your letter of 16th February, with enclosures from Senator Westmann and H. E. Baron Brunow, I have to state that, coupled with information which I have received from the Director of the Imperial Botanical Gardens of St. Petersburg, I believe these signify a wish that I should represent, on the part of Her Majesty's Government, the scientific horticultural establishments and the botanists of this country at the forthcoming Congress of Botanists and Horticulturists at St. Petersburg. Should Lord Clarendon concur in this view of the matter, and think proper to act upon it, I would beg to refer their Lordships to the Right Honourable the First Commissioner of Her Majesty's Works, under whose orders alone I can take any steps in the matter.—I have, &c.

(Signed) J. D. HOOKER.

To the Right Hon. E. Hammond, &c.

MR. G. RUSSELL TO DR. HOOKER.

Her Majesty's Office of Works, &c., Whitehall, March 19, 1869.

SIR,—With reference to your letter to the Earl of Clarendon of

the 22nd ultimo, on the subject of the forthcoming Horticultural Exhibition at St. Petersburg, I am directed by the First Commissioner of Her Majesty's Works, &c., to acquaint you that he has been in communication with the Treasury respecting the invitation to you to take part in the Congress of Botanists on that occasion, and I am to express his regret that their Lordships have declined to sanction, as recommended by him, the expense of your mission.

I am, &c.,

To Dr. Hooker, Kew. (Signed) GEORGE RUSSELL, Secretary.

DR. HOOKER TO THE FIRST COMMISSIONER OF WORKS.
Royal Gardens, Kew, March 27, 1869.

SIR,—In reference to the Board's letter of March 19th, informing me that the Treasury decline sanctioning, as recommended by the Right Honourable the First Commissioner, the expenses of my attendance at the Botanical and Horticultural Congress at St. Petersburg, I have to state that I understand this to mean that they decline authorising the dispatch of a Commissioner to take part on that occasion. I much regret this action of the Treasury, as contrasting so unfavourably with the liberal action of the Imperial Government of Russia, which sent Commissioners both to our Botanical and Horticultural Congress of 1867, and to our industrial exhibitions, and with the action of the foreign Governments, who are now sending Commissioners to St. Petersburg. I cannot further refrain from expressing my conviction that the refusal on the part of Her Majesty's Government to recognise both the scientific and practical importance of the congress about to assemble under the Imperial auspices at St. Petersburg (and this at the very time when Her Majesty's Government are sending a Royal Commissioner to represent Her Majesty's Government at a second-rate and mere horticultural show for trade purposes at Hamburgh, as officially announced in the foreign newspapers) will be regarded as evidence of something more than mere indifference to the position which science holds in this country, or mere ignorance of that attained by the eminent men who convene the congress, and who will assemble at it, or mere disregard of international courtesy in scientific matters. So strongly do I feel this, Sir, and so sensible am I of the many practical proofs which the Imperial Government of Russia has given of its special estimation of Kew, and of the scientific acquirements of its late director, that I would beg of you to sanction my regarding it as part of my duty to attend the congress on May 17th (paying my own expenses), and thus show, in my capacity of Director of Kew (not as Commissioner on the part of the Government), that the Department under which I have the honour to serve pays due respect to the wishes of the Imperial Government and of the scientific men of Russia. For myself, I never was ambitious of the post of Royal Commissioner, still less was I actuated by a desire to have my expenses paid, in bringing the subject under your notice.

I have, &c.,

(Signed) JOS. D. HOOKER, Director.

To the Right Honourable the First Commissioner of Her Majesty's Works.

[The words we have italicised, coming as they do from the superintendent of our chief public horticultural establishment, are worthy of attention.]

The Derby Arboretum.—The committee report that the grounds have been well kept during the year, and are in a satisfactory condition, and that, notwithstanding the general increase in the cost of labour, the amount expended in wages has not exceeded that of previous years. They draw attention to the fact that the specimen trees and shrubs originally placed in the Arboretum are year by year becoming more affected by the increasing smoke of the neighbourhood, and that in a short time their places will have to be filled up by plants of a hardier nature and more able to resist the injurious effects of the atmosphere. The committee have pleasure in reporting that the number of subscribers shows an increase over former years.

The Thistle Abroad.—A clergyman is reported to have introduced the Scotch Thistle to America, by taking with him a bed stuffed with Thistle-down, in which some seed remained. Finding feathers cheap in the new country, he substituted them for the down, which was soon thrown out as rubbish; and the seed springing up like the Genii out of the jar, in the Oriental tale, who filled the face of heaven with smoke, spread itself over the land. Another tradition, and a more likely one, says some enthusiastic Scotchman introduced the Thistle to remind him of his far-off home. At present its increase types not ineffectively the progress and rise of Scottish enterprise wherever it once roots itself.

THE LIBRARY.

THE CLEMATIS AS A GARDEN FLOWER.*

This is a good book on an interesting if somewhat limited subject. A completeness of plan is visible throughout the work, which shows in every part evidence of the authors' wide and accurate knowledge of cultivated plants. There is nothing in the history of hybridisation or cross-breeding more interesting than the history of the cultivated Clematises for these last dozen years, and it is told in the book before us with an accuracy and thoroughness which, we regret to say, is far from common in garden literature. It is pretty freely illustrated, but while we can praise the engraving as good, we cannot praise the drawing, which is not such as shows the natural grace of the plants. Indeed, from an artistic point of view, some of the illustrations are likely to do harm rather than good. The highest beauty of the Clematis is only seen when the shoots are allowed to fall over the face of a miniature cliff or sunny bank, or any similar position, in which, without support of any kind, the flower-laden shoots look as much at home as Honeysuckles in a copse. A few good cuts, showing the effect of these beautiful plants so grown, would have done much to help the cause of artistic gardening. The following extract will show the excellent way in which the literary part of the work is done:—

The following sectional groups are intended to be strictly cultural and seasonal, and are to be so regarded—in fact, as being framed entirely for the guidance and convenience of the cultivator, and not as having any special relation to the botanical affinities of the various plants. A comprehensive idea of the considerations which have presented themselves in arranging the various forms may be gained from the annexed key to the groups themselves:—

CLIMBING PLANTS.

- Flowering on the year-old ripened wood—
 - Flowers medium-sized (winter and spring bloomers) § 1. Montana type.
 - Flowers large—
 - Spring-bloomers § 2. Patens type.
 - Summer-bloomers § 3. Florida type.
- Flowering from the young growing summer wood—
 - Flowers small (late summer-bloomers) § 4. Graveolens type.
 - Flowers large (summer and autumn bloomers).
 - Flowers successional dispersed § 5. Lanuginosa type.
 - Flowers successional massed § 6. Viticella type.
 - Flowers profusely massed continuous § 7. Jackmanni type.

NON-CLIMBING PLANTS.

- With subshrubby stems § 8. Cœrulea odorata type.
- With herbaceous stems § 9. Erecta type.

THE MONTANA, PATENS, AND FLORIDA TYPES.

These sections include the earliest or spring-flowering divisions of the family. The majority of the species and varieties of which they consist come into blossom naturally about May; but some few of them, e. g., *C. calycina* and its allies, are much earlier than this, and blossom from the commencement of the year onwards. These latter are best suited for planting against walls, in warm sheltered situations, where their opening flowers may be in some degree protected against inclement weather. The varieties belonging to *C. patens* and *C. florida* (represented by *C. Sieboldii*, one of the same type), are perfectly adapted for planting against conservative walls or in corridors, and some of them make elegant early-blooming beds, especially in positions where their blossoms are thoroughly sheltered either naturally or artificially, from severe spring frosts, which occasionally, though rarely, may somewhat injure them. *C. montana*, also a spring or May bloomer, is of vigorous growth, and perfectly hardy, and is specially adapted for covering walls, or trellises, or arbours, or in fact for planting in any position where rapidity of growth is desired. The same may be said of the species of the *graveolens* type, hereafter to be noticed, and which mostly flower later in the year.

None of these plants, especially those of the *montana* type, are very particular as to soil, but will grow in any good garden earth which is fairly enriched, efficiently drained, and maintained in a healthy state as regards its mechanical composition—that is, kept open so that water may freely percolate, and the air readily permeate it. Where it can be provided, a rich soil of a light loamy texture is the best for all these plants, and if this be mixed, either naturally

* "The Clematis as a Garden Flower." By Thos. Moore, F.L.S., &c., and George Jackman. London: John Murray.



CLEMATIS LANUGINOSA.

or artificially, with chalk or lime, so much the better for the Clematises. Thorough drainage is indispensable to good healthy development; and the vigour of the plants must be kept up by at least annual manurings with horse or cow manure, or that happy fertilising mixture known as "farmyard muck," these being alike salutary applications. On dry hot soils, cow manure would probably be preferable; while on heavy soils a thorough dressing of good leaf-mould would be beneficial. Mulching, which consists in covering the surface of the soil for some little distance round about the plants with half-rotten dung, is another mode of manuring, from which the plants derive no inconsiderable amount of benefit. This operation should be performed annually on the approach of winter, and is more necessary after the plants have become established, as the manure applied at the time of planting will then be more or less exhausted. The mulching acts, moreover, as a protection to the roots in the case of severe weather, and though not necessary on this score—the plants being thoroughly hardy—is certainly not injurious. The effect of mulching would be to increase the strength of the plant, and at the same time the size of the flowers. When growth commences in the spring-time, the young shoots must be attended to, and trained around or against the supports provided for them, whatever these may be. The weaker shoots may, if necessary to prevent entanglement, be cut away during the summer; but all the vigorous shoots for which there is space should be trained in, since it is these, when thoroughly developed and matured, which furnish the flowers for the ensuing year. The strong growing sorts of the montana type are good verandah plants, and suited for rapidly covering any bare spaces which require clothing; but the less robust plants of the florida and patens types are better suited for training on conservative walls or for furnishing corridors, or any similar positions where their elegant and showy blossoms may be brought more closely into view.

Pruning is one of the important points of good management, and on its due performance mainly rest the chances of having a fine display of flowers. Only the weaker, or straggling, or overcrowded branches should be cut away. The strong one-year-old wood should be trained in, as far as it has become thoroughly ripened, beyond which it may be cut away; and this should be so disposed as to fill up all vacant spaces. The pruning should take place in the month of February or March, after the severe frosts of winter have passed away.

THE GRAVEOLENS TYPE.

This small group comprises a series of thoroughly hardy fast-growing species, which may be said to require scarcely any cultivation. They grow freely enough in any ordinary garden earth which is of sound texture, and fairly drained; though many, probably most, of them have a preference for soil of a calcareous character. They will scramble over trellises or thickets, or clamber up snaggy poles, or amongst the boughs of trees, and therefore may be employed in any position where a summer screen is wanted; but being deciduous they are not adapted to form winter screens. As to training, they make holdfasts of their leaf-stalks, and thus take care of themselves; and the natural growth thus made and thus disposed, would in most cases be of a more picturesque character than would result from artificial training. If, however, they are required to cover any particular spot, the main branches should of course be led, and as far as necessary fixed, in that direction. The only pruning which is required in the case of the plants belonging to this group is to thin out superfluous or entangled growths, and to restrict the plants within the bounds that may be assigned to them. On the other hand, if severe pruning should for any particular reason become necessary, no amount of cutting will do permanent injury to the plants, nor affect their growth or their blooming, unless, indeed, it is so persistently followed up as to interfere with that fair share of leaf development which is necessary to maintain health and vigour in all plants.

It has been remarked that Clematises of this type will, if permitted, clamber up amongst the boughs of trees. When, however, they are planted near to or beneath large trees, or at all within their influence, it is desirable, in order to promote vigorous and rapid growth, to mulch the surface of the soil during winter, forking in the manure about the month of March. In such situations, too, it may chance that drought may overtake the roots, since not only will the trees themselves suck up much of the available moisture, but in a greater or less degree they will keep off the natural supply which comes in the shape of rain. In dry weather, therefore, and especially until the plants become tolerably well established, the artificial application of water, in such quantities as circumstances may render necessary or desirable, should not be forgotten.

THE LANUGINOSA TYPE.

The remarks which have already been made as to soil in the chapters devoted to the preceding sections, will apply equally to

this group. The plants are of a hardy constitution, and a tolerably vigorous habit of growth; and they produce blossoms of enormous size, so that liberal cultivation is for them an absolute necessity. They will, indeed, succeed in any good, sound, well-drained garden soil, which is freely and annually manured, but they would no doubt prefer a light mellow loam to any other basis, and therefore, in the case of very light soils, it would be a material benefit to them to resort to the admixture of the best loam that may be available, in trenching up and preparing the ground before setting out the plants. The more fertile the natural soil the less manuring will be necessary, and *vice versa*; but it should be understood that in any case a really well-enriched soil, either natural or artificial, should be secured if the full beauty of this race of the Clematis is sought to be developed.

C. lanuginosa and the varieties of this type of growth are exceedingly well adapted for planting against conservative walls or trellis-work, whether the latter be put up in the form of a screen or a verandah, and they are also suitable for poles or pyramids. In the latter cases, especially, they should be annually pruned down to about 3 feet from the ground surface, to prevent them becoming lanky and bare of new shoots near the base, the tendency of the new growth being to develop itself with excessive vigour at the extremities. When thus cut rather low, so as to secure a supply of foliage at or near to the base, the beauty of the plants is much enhanced. The same remarks apply to those on walls or trellises, if they are required to cover an allotted space; but in this case it frequently happens that the lower part can be filled out by less aspiring subjects, and then it is as well to secure and utilise the more vigorous growth of the plants towards the top. In any case, the successional summer growths should be trained in so as to secure the later crops of blossoms, the habit in this race being to throw out a sprinkling of flowers at intervals, till the frost comes to arrest further growth. It will be evident from what has already been said that comparatively slight pruning is here required. The type itself, and those varieties which come nearest to it in habit, indeed, die back almost sufficiently to render pruning unnecessary; but in those instances where a mixture of wood has led to a more extended growth, it will be necessary to cut so as to remove the weakly and ill-ripened portions of the year-old wood. Under favourable conditions, the plants will make an annual growth of from 8 to 10 feet in length, and of this the unripened extremities, together with the weak or superfluous shoots, and the dead wood, are the only parts which ought to be removed. This pruning is best done in February, after the severe winter frosts are past, and before the plants burst out into new growth. We have said that these plants are hardy, and for all practical purposes they may be so regarded. They are, however, less robust in constitution than some of the allied groups, and hence in their case, the mulching which has been recommended as an advantage to all, may be looked upon as being rather more of a necessity, provided the plants occupy positions where such an application would be at all admissible. The annual feeding, by working in some half-decayed manure during the early spring, should on no account be omitted, as the size and succession of the blossoms depend entirely upon the vigour which is kept up in the plants; but where the mulching of manure would be objectionable, because unsightly, a surface covering of some other protective material, such as the refuse of the fibre of the Cocoa-nut, would be a desirable substitute for it.

THE VITICELLA AND JACKMANNI TYPES.

These groups represent some of the hardest as well as some of the noblest of the whole family. The severest winters do not injure them in any material degree, and from their wonderful fertility of flowers, the plants in the late summer and autumn months literally become masses of blossoms, successively and continuously renewed. They may therefore claim to occupy one of the highest positions amongst hardy ornamental climbing shrubs. In regard to soil, the same free, well drained, deep, and well-enriched staple, which has been noted as suitable for the preceding groups, will be found equally adapted for these. A friable loam is the best soil they can have; if it is not so suitable as this in quality, it should at least be deep, that the roots may penetrate freely. A loamy soil is the best, because the plants must have manure liberally supplied to them, in order to keep up their strength; and in a loamy staple, the fertilising properties of the manure are not liable to be dissipated, as they are in one which is poor and porous. When, however, the soil approaches this latter description, it is all the more necessary for the plants that manure should be abundantly applied, to make good the natural deficiency in fertility. In the case of light soils, a good proportion of loam—made friable by frosts, if at all of a heavy or clayey character—should be incorporated, since this will render it the more holding; deep trenching should also be resorted to for the same purpose. In the case of heavy soils, they should be ameliorated by the free inter-

mixture of calcareous soil or of any sharp gritty material which may be available, the drainage being made efficient, and the soil well aerated before planting.

When the ground has thus been prepared, the plants may be put out during any open weather which may occur between the middle of September and the end of April. After planting it is beneficial, though not absolutely necessary, to apply a mulching of a few inches of partially rotten manure on the surface; this will both serve to protect the newly-disturbed roots and also tend to fertilise the ground. The varieties of these types of Clematis are essentially outdoor or border plants, since they require abundance of root space; they may, indeed, be grown into exhibition specimens, as will hereafter be explained, but even then they require a liberal supply of root accommodation and high feeding. To sum up this branch of our subject, the *Viticella* and *Jackmanni* types of Clematis require to be grown in rich deep soil, to be manured freely every season, and to be planted out in the open ground, that their roots may have free pasturage.

These forms of Clematis flower on the vigorous summer shoots, which culminate in floriferous ramifications forming dense masses of blossoms. The object, therefore, in pruning, should be that of favouring to the utmost the development of these vigorous young shoots, and this is done by cutting the summer growth back early

the earliest crop of flowers. The important point is to take care, by liberal manuring, to keep up the strength of the plants—to make good, that is, the demands which have been made upon them by the marvellous annual development of flowers, a feature which is especially characteristic of most of the *Woking* hybrids. If, therefore, mulching should be inconvenient, a good dressing of rotten manure applied in November, when the plants are pruned, and turned in at once, will answer every purpose.

The use to which these types of Clematis may be applied are exceedingly various. They may be trained up snaggy poles, either singly, or several together, to form pillar plants; or they may be allowed to scramble over masses of rockwork or rootwork—subjects which will be separately treated on. They may be festooned, or they may be trained over verandahs, or fastened to walls, or trellis-work, or led over ornamental iron supports as single standard specimens for lawns. In either way, and in every way, they are found to be thoroughly effective as flowering plants, many of them indeed, and especially those of the true *Jackmanni* type, being capable of producing a startling impression in consequence of the gorgeous masses in which their rich Tyrian hues are displayed. The *Florist and Pomologist* observes that—

As flower garden plants, dotted here and there on the lawn, or forming



The Beach or Sand Plum. (See p. 450.)

in the season, as soon as the frosts have disfigured the plants, say about November, to within about 6 inches of the soil. The mulching, which is then to be applied with a liberal hand, serves to prevent the soil becoming severely frost-bound, and should, about the middle or end of February, be neatly forked in along with, in some cases, an additional supply of rotten dung, the latter being regulated by the manurial qualities of the original mulching, and by the natural strength of the land. Thus treated, the plants will commence flowering about the first week in July, and they will go on yielding flowers as long as their strength will enable them to throw out lateral growths. To obtain a later bloom a portion of the plants should be left over at the November pruning, and not be cut back till the end of April, after they have commenced to grow. The process is, indeed, to some extent weakening, but by keeping the ground in good heart by copious manuring, the plants do not appear to suffer, but come into blossom about a month after those pruned in November, and thus help to prolong the blooming period to the limit assigned by the frost.

Though, as we have said, this winter mulching is beneficial, it is really more so as a source of food than of protection, for the plants are perfectly hardy, and will thrive as well without it, provided they are otherwise fully fed. There is, however, doubtless some advantage accruing to the plants from preventing the frost striking deeply into the soil, especially in the case of those which are treated for

an avenue in a more formal flower garden, it is almost impossible to over-estimate the gorgeous effect which they are capable of producing and maintaining for a considerable portion of the summer and autumn months, the bloom being at its best about the middle of August. We have seen nothing more enchanting as a floral picture than that presented by a fine group of pillar plants. To bring out their best effect as "pillars," they should be grown in "hills" like Hop plants, each hill being furnished with three stakes, standing some 7 or 8 feet above ground. The plants require annually to be cut down nearly to the base, in the early part of winter, and should be liberally manured; they cover the supports with their rapidly extending branches by the month of June, and then begin to branch out freely, so as literally to clothe the whole mass with a sheet of glowing purple. In this state there is no finer flowering plant for lawn decoration—no more gorgeous subject for garden avenues.

One of the most useful purposes to which these varieties of Clematis could be put would be to drape a mural ruin or to cover an unsightly bank or slope. They will grow in almost any situation if the soil is not absolutely deficient of food, or if the roots of other plants do not rob them of a fair supply of nutriment; and in such situations nothing would be required but to throw down a few tree-roots or rough branches for them to scramble over. Thus planted, a layer of manure worked in annually with the fork, and a supply of water in very dry weather, would secure a rich compensation of floral embellishment.

Again, they rank amongst the noblest of ornaments for low walls,

trellises, &c., to which they must necessarily in the first instance be nailed or tied; but once firmly fixed, they should be allowed to fall down in rich picturesque masses. Probably, however, the simplest and grandest use that could be made of them would be to plant them on large masses of rock-work, giving them a good depth of rich, light, and sandy earth, and allowing their shoots to fall over the face of the blocks without any training or pruning.

The late Mr. Neilson has pointed out (*Gardeners' Chronicle*, 1870, 1410) how charming *C. Jackmanni* becomes, when grown on parasol-shaped trainers 5 feet high, and ranged in line alternately with standard plants of *Acer Negundo variegatum* of the same height, and at the distance of their own height from each other, in front of an Ivy-covered wall. The never-ending thousands of purple flowers of the Clematis, and the bright leafy splendour of the *Acer*, associated with the Ivy background, forms a rich combination of flower and foliage, the beauty of which no words can express. When grown in this fashion, however, the Clematis should receive every encouragement, so that it may not in any way be checked in its development. This consideration suggests the desirableness of mentioning here, that if a dry July or August should set in, the plants must be freely watered, alternate waterings of liquid manure being not only very beneficial to their growth, but also conducive to increased size of flower and continuity of blossoming.

We shall here find, among the varieties of the *Viticella* and *Jackmanni* types, those kinds of Clematis which are especially adapted for bedding-out for summer and autumn flowering.

NON-CLIMBING TYPES.

The non-climbing species and varieties of Clematis consist of two small but distinct groups, the one herbaceous, the other sub-shrubby. The former, that is to say, the herbaceous species, thrive best in good rich deep loamy soil, and when they become well established, they form somewhat striking plants for the mixed border, though scarcely any of them fall into the very front rank of herbaceous perennials. The double-flowered varieties of *C. erecta* and *C. maritima* are the most ornamental, and are well worth introducing even into a select collection. These herbaceous species grow freely enough in any tolerably fertile garden soil, but it should be of good depth, as the roots are strong, and strike downwards. A free application of manure is beneficial to them, especially if the soil is not naturally of a fertile character.

The sub-shrubby varieties of the non-climbing group include some exceedingly ornamental plants. They are especially adapted for the back rows in mixed flower borders, where plants trained to a height of 5 to 6 feet would not be obtrusive; for prominent positions in the front part of shrubby borders; or for dwarf standards on iron trainers in beds—whether of Clematis or of other plants. They require a good preparation of the soil, which should be deep and rich, exactly as recommended for the varieties of the *Jackmanni* and *lanuginosa* groups. In spring, before growth recommences, the plants should be pruned back to the well ripened wood at from $1\frac{1}{2}$ to 2 feet from the ground, and a firm stake or support provided for each. To this support, as they grow, the young shoots require to be tied—an operation which is all the more necessary as they do not support themselves, like most other woody-stemmed species, by converting their leaf-stalks into tendrils. When the branches begin to ramify, which they do at a height of 3 or 4 feet, they may be allowed to fall down on all sides, and in this way they ultimately form a mass of flowers like a huge bouquet. *C. cœrulea odorata* is a most desirable plant of this group, not only for its abundant well contrasted blossoms, but also for their fine scent.

THE FRUIT GARDEN.

THE BEACH OR SAND PLUM.

THERE grows along our coast, from Maine to the Gulf, a species of Plum which does not seem to have received much attention from cultivators. It is the Beach Plum, *Prunus maritima*, and is called in some localities the Sand Plum. It is found growing close to the sea among the blowing sands of the beach, and often at a distance of twenty miles inland. When found at a distance from the sea, it is so much changed in appearance by the difference of soil and situation, that it has been taken for a distinct species, and the plant has been described by botanists under half a dozen or more different names. The tree, or rather shrub, is seldom more than 5 feet high, oftener only 2 or 3, and has numerous stout branches, which are usually prostrate, and more or less covered by the shifting sand. The colour of the stem is a very dark purple, almost black, and the young shoots are brown, dotted with orange. The shape of the

leaves is shown in the engraving (page 449); they are smooth on the upper surface and somewhat downy below; they are much finer on the plants that grow upon the beach than upon those found inland. The fruit is from half an inch to an inch in diameter, globular, and varying in colour from crimson to dark purple, and having a fine bloom. The shrub flowers in May and June, and ripens its fruit in September. The fruit varies in different plants, not only in colour and size, but in quality—some specimens being quite pleasant to the taste, and others very harsh and acerb. It is highly prized by those who live near the shore for making preserves, and it is often seen offered for sale in the markets of seaport towns. As this fruit presents so great a tendency to vary in its wild state, we are surprised that no attempts have been made to improve it by cultivation. If a good variety could be produced it would be valuable. The wild plant is very ornamental when in fruit; the specimen from which the fragment was taken for the engraving was loaded with fruit, which in different stages of ripeness, and with its fine bloom, was an attractive shrub. Our principal object in calling attention to this Plum is the promise it holds out of being useful as a stock on which to bud or graft the cultivated varieties. It would flourish upon the poorest soils, and it is very likely that it would prove a dwarfing stock.—*American Agriculturist*.

THE FRENCH PARADISE STOCK.

A FEW years ago there was much discussion regarding the French and English Paradise stocks. It was maintained by some that the former was worthless for all practical purposes in this country, because it was not hardy enough, &c.; but there has been time to test its merits to some extent since then, and I should be glad to learn from those who planted it at the beginning what success they have had with it, and what they think of its adaptability for ordinarily favourable situations. I hope those who favour me with their experience will make themselves perfectly certain that, before they do so, it is the true French stock they have got, and not the English Paradise. I say this because I find it to be a very difficult matter to procure it (the French Paradise) in this country; and, so far as my experience goes, nurserymen seem to discourage its introduction. Last year I wanted a number of trees on the French stock, and had a quantity sent to me by a very respectable nurseryman whom I knew; but the vigorous appearance of the trees made me doubt the stock. Acting upon my advice, the nurseryman wrote to another in the trade, who advertises one of the largest collections of Apples and Pears in England, and stocks of all sorts and sizes, and the result was a letter in reply condemning the French Paradise stock as useless, and recommending another variety of the English Paradise, which the writer of the letter had raised and named after himself, and which it appeared was superior to any other in existence. Not a little annoyed at being put off in this way, my friend took the trouble to procure the plants for me direct from France, and from an undoubted source; and fine well-ripened little trees they were, only about half as vigorous as those I had got before on the English stock. They were planted in March, and some of the trees, though only maidens, bore a few large fine fruit this season, and they are planted in the open quarters of the kitchen garden. They have also made a good growth, and promise to bear well next year. Besides these, I ordered another lot on the French Paradise, this time from a friend north of the Tweed; but was informed they could not be got in England true, and that I must wait until the frost had gone in France, when I should be supplied. I did so, and had them direct from Orleans in April. This is my experience in trying to get the French Paradise stock, which I am desirous of experimenting with; and I shall be glad, as I said before, to know what luck others have had who have tried it.—*FRUITER*.

Planting Vines.—May I crave your assistance under the following circumstances? I have just erected a Vinery 21 feet by 16 feet inside measure, the whole interior being made about 4 feet deep with good soil. What I particularly want is three-year-old Vines, so that they may begin bearing next summer. I intend planting four Black Hamburgs and two Sweetwaters *inside* the house, and cannot procure the Vines more than one-year-old in Scotland. Do you consider it advisable to put in three-year-old canes with any prospect of their making permanently good Vines?—L. R. [Mr. Tillery, of Welbeck, an excellent cultivator, says:—"I should advise planting one-year-old Vines as more likely to form good permanent shoots and roots than three-year-old ones. When Vines are grown three years in pots they get so cramped that it is difficult to spread their roots properly out so as to ramify as they ought to do in the border. There is nothing gained by planting three-year-old Vines, for the younger ones, if planted in a suitable soil, and well attended

to, will make as strong fruiting wood the year after planting as older ones. It is better to fruit three year old Vines in pots for a supply of fruit the first year or two, till the permanent Vines in the borders begin bearing. In addition to Hamburgs, I should advise your correspondent to plant two Buckland Sweetwaters and one of Foster's White Seedling. The leading London nurserymen have at this season plenty of fine strong fruiting two or three years old Vines in pots, and it is better to secure them early than to wait until they are all picked over for the strongest."]

Transplanting Old Trees.—Doubt as to the probable consequences often prevents people of limited experience from transplanting or lifting aged trees that are, perhaps, favourites, when it would very likely be the most advisable thing to do. Two or three years ago I had to transplant about fifty Apple and Pear trees, none of them under forty years of age, as far as I could learn, and which had never been disturbed since they were first planted. Consequently, the roots had travelled far into the stiff loam, and getting them up with anything like fibrous roots was simply impracticable. Roots few, and as thick as my arm generally, were all that could be secured. Nevertheless, the trees were replanted, and well mulched, to protect them from cold in winter and drought in summer. This, no doubt, saved them as much as anything else, for it was the summer of 1863, which was a dry one, as everyone will recollect. The trees survived, but that was all; no buds moved perceptibly the whole season, and the trees remained leafless for more than a year. The bark also shrunk considerably during the summer, but the roots had been pushing a little, thanks to the mulching, and the year following the trees broke vigorously into leaf, and since then have borne more fruit perhaps than they did for twenty years previously. Root-pruning has a far more lasting effect upon old trees than upon young ones. —J. S.

Companion Grapes for the Black Hamburg.—I want to plant two Vines in the same house with the Black Hamburg; what sorts do you recommend as good varieties requiring the same degree of heat, and, generally, the same treatment as the Black Hamburg? Is Ferdinand de Lesseps a hardy Grape?—A SUBSCRIBER. [The Buckland Sweetwater, a white Grape, would succeed under the same heat and treatment as the Black Hamburg; but if a late-keeping variety requiring the same temperature is desirable, the Black Alicante or Lady Downes' Seedling would answer the purpose. The Ferdinand de Lesseps is a hardy Grape, for it can be fruited in an orchard house with very little artificial heat. It is, however, small both in bunch and berry, and its very peculiar sweet Eldor-flower or Hautbois Strawberry flavour does not please every palate.—W. T.]

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Trees for a High Wall.—I have a high stable wall facing south, which I should like to cover with fruit trees, and should be glad if you would advise me as to the best fruit to plant.—H. [Plant winter Pears, either trained as oblique cordons, or with three or five branches, trained erect, to cover the wall quickly.]

Apples on the French Paradise.—Upon the whole, this has been an unfavourable year for the ripening of the wood, but my little trees on the French Paradise are remarkably well matured, and contrast significantly with those on the natural stock. This applies to trees in wet clayey loam. The hardness of the French Paradise I have already proved for myself.—J. W.

Stakes not needed for Raspberries.—Staking I don't find to be necessary for Raspberries. From four to six canes are left to a stool, and a stout tie is put round them about the middle, and drawn pretty tight, which leaves the tops spread out, and gives them room to bear. Tied in this way, the canes support each other perfectly well, and the trouble of repairing the stakes every year is done away with.—J. S.

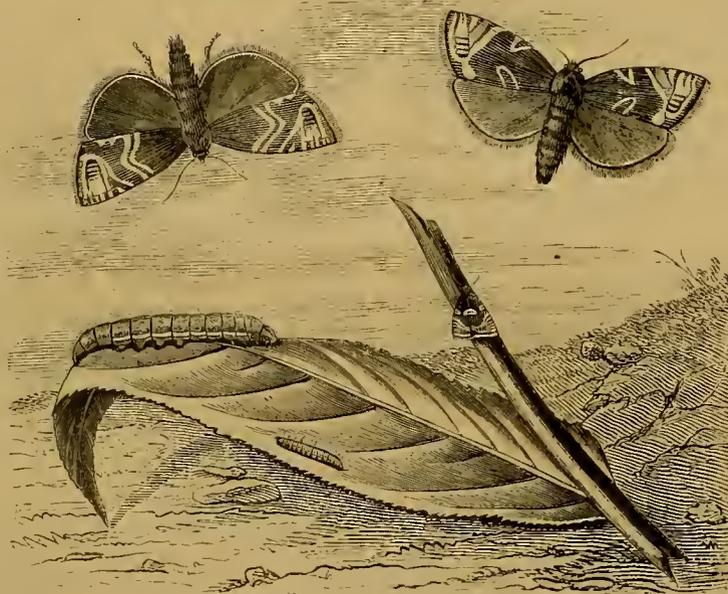
GARDEN DESTROYERS.

TORTRIX (STIGMONOTA) DORSANA.

STIGMONOTA DORSANA is a small moth, similar to one which we lately described (*Retinia Buoliana*), which does much mischief to the Pine forests in Germany, but which we believe has not yet been observed in this country; but as, according to Ratzeburg, it is a mountain species not found in Germany under 2,000 feet above the level of the sea, it is possible that it may turn up in the north of Scotland, and we, therefore, give a brief account of it for the benefit of those of our readers who may have the opportunity of searching for it there.

The perfect insect appears about the middle of June, sometimes a little sooner or a little later, but rarely so late as the end of July. Apparently the female then lays her eggs on the bark of the Pine tree, near the vertical branches, and the eggs are generally placed in the crevices or deeper rifts. The young caterpillars bore through the bark into the stem, and then eat themselves a passage in the alburnum rarely over an inch in length, but very broad and always full of running resin,

from immediate contact with which the caterpillar lies protected by a finely-spun tube of silk, and feeds on the soft wood thoroughly penetrated with resin. The debris ejected from the boring hangs as a brown lump of worm-dust, about the size of a pea, and betrays the presence of the insect. Besides these usual places of abode, the caterpillar is also found in the dry lumps of resin which occur on the stems and branches of larger or smaller trees, especially those which have sustained some injury. The difference of these positions might suggest that their inhabitants did not belong to the same species, but Ratzeburg had his attention directed to this, and says that he could find no difference between the caterpillars that inhabited them. There is a lighter and darker variety of it, but the former is found indiscriminately in both



Tortrix (Stigmonota) dorsana.

places, and the latter has rarely been met with. The caterpillar passes into the pupa state in the tube which it has spun and lived in, and after fourteen days the perfect insect appears, the pupa previously pushing itself out to the opening of the hole.

The moth is represented in the accompanying woodcut, both of its natural size and magnified. The upper wings are dark brown, with silvery white markings, the lower wings uniform grey, with a lighter fringe. The caterpillar is six lines long, pale yellowish or reddish, with a light brown head and shield on the first segment. The pupa is dirty brown. In the woodcut the caterpillar is, by mistake of the artist, represented as feeding on a Willow-leaf, instead of as we have above explained. This is a decidedly injurious insect to the Pine trees. From four to six caterpillars live in one verticel of a branch, so that the alburnum is soon eaten away all round, and the branch dies; and, as is usually the case where a part of a tree is killed, other insects are attracted, which extend the mischief.

A. M.

THE FLOWER GARDEN.

THE VINE AS AN ORNAMENTAL CLIMBER.

THE effect of a picturesque climber may be produced almost more agreeably than in any other way, by a Vine planted against the trunk of a tree, trained at first, and then allowed to run wild among the branches. The Vines from which a weak white wine is made in the south of Italy are allowed to climb in that manner into the branches of the Lombardy Poplar, which form admirable supports; and the most graceful pendants and festoonings between branch and branch, and tree and tree, are the consequence. I recollect an example of a Vine being planted with the sole view of its becoming a picturesque climber, in the garden of the late Mr. Loudon, at Bayswater; the effect was most successful; after a few years' growth, the great snake-like arms of the Vine swung themselves in a most fantastic manner from branch to branch of the supporting tree, just as we see the great parasites of the Brazilian forests represented by artists who have had the good fortune to prosecute their studies in the tropics. Mr. Loudon's tree, at the bottom of the garden, with its great snake Vine, as it was called, was frequently sketched by artists, who were always much struck by its singularly picturesque effect.

NOEL HUMPHREYS.

CLEANING GARDEN WALKS.

WHERE the walks have been properly made, and the weeds never allowed to seed, hand-weeding after a shower of rain, and rolling directly the surface will bear the roller, are in many places practised with success. But in gardens where gravel walks are extensive, and, as sometimes happens, the gravel is of a coarse, shingly character, which, if disturbed or broken up, involves some difficulty in getting a firm, smooth surface again, a destructive agent of some kind becomes desirable. I have never yet met with anything that destroyed the weeds without taking also some of the bright red colour out of the gravel; but apart from such drawbacks, walks may be kept clean cheaply by the use either of salt or sulphuric or muriatic acids. In different localities the price of those articles varies considerably, a circumstance generally governed by the distance from the manufactory. For instance, in Worcestershire some years ago salt could be purchased for something like five shillings per ton, whilst in Norfolk the cost would be probably twenty-five shillings. So far as my experience goes (which has been considerable), I have no hesitation in saying, where a large extent of gravel walks and roads has to be kept free from weeds, a good sprinkling of salt sown over the surface in dry weather is the cheapest mode of doing it. But then its appearance is in some places objectionable. It remains, I admit, like a miniature snowstorm glistening in the sunshine for some days, till all is dissolved and absorbed. Another way of applying it is in the shape of hot brine (about one pound of salt to a gallon of water), boiled in a huge travelling cauldron on wheels, and drawn off through a tap at the end into watering pots, and sprinkled over the surface just sufficient to damp the whole face of the walk. Mr. Fleming, when at Trentham, invented a machine which bore his name, and which I have used successfully. But this plan is on the whole more expensive than simply sprinkling the dry salt on the surface. True, it does not take so much salt, but there is a considerable expense for fuel, and the labour in applying it is very much greater. But there is this advantage about it—it gets rid to a certain extent (not altogether) of the objectionable white appearance. Walks impregnated with salt, if they are not well drained and well made, are nearly always damp in winter; and the same remark is also equally applicable to the use of both sulphuric and muriatic acids. They are also so easily adulterated by simply adding water, that in all probability the strength varies at times in different localities. On the whole, I have found the use of acids more expensive than salt, and certainly not more efficient. It is also very destructive to waterpots, men's clothes, and in fact anything that comes in contact with it, therefore it requires to be used with great care. Whatever plan is adopted in destroying weeds, the effect in any case will not last beyond one season. Both salt and sulphuric acid in moderate

quantities, or when largely diluted, are powerful manures; but I have generally found one good dressing in a year sufficient when applied in dry weather. If the gravel is of a kind that binds easily in a partially dry state, keep down weeds by weeding when the walks are wet after rain, using the roller immediately after; but don't overload the walks with gravel. If the gravel is coarse and not easily smoothed down when distributed, I should then recommend salt, either sprinkled upon the surface or in the shape of hot brine, if appearances are studied more than expense. There is also another important consideration in connection with the use of salt or acids, and that is the difficulty in some cases of preserving the edgings from all contact with it. Where the edgings were turf, I have never found any difficulty; but where Box edgings are used, the greatest care is necessary. If used near Box edgings, and showers follow soon after its use, in all probability, unsightly patches of dead Box will not be uncommon.—E. HOBDAV, in *The Field*.

Hardy Cyclamens.—I was pleased to observe your notice (see p. 357) of Mr. Atkins' *Cyclamen græcum*. This, and the English form *hederifolium*, if used as bedding plants, would be most charming objects in the flower garden. In autumn the bed would be a sheet of blossom; in winter there would be a carpet of foliage which would vie in beauty with the *Anætochili* of our hothouses, and if *Scilla sibirica* and *Leucojum vernum* were freely intermingled with them the intense blue of the one and the snow-white of the other, rising from amidst such foliage, would be a sight in spring rarely met with. I have been led to make the suggestion just alluded to from the pleasure which I derived last winter from a group of *hederifolium* planted in my garden. As to culture, there is no difficulty; any ordinary soil well drained is all that is needed. When the summer bedding-time arrives, the roots may be lifted and planted in a piece of reserve ground, and brought back in autumn to where they are to be kept during the winter.—P. BARR.

Violas for Spring Bedding.—Without in any degree wishing to impugn Mr. Fleming's statement with respect to *Violas*, I venture to submit that his experience and mine differs. There are few things which I would so readily recommend for spring gardening as some of our early blooming *Violas*. With me *Yellow Queen*, a robust grower, was literally a mass of gold all through last April and May; the best plants of it for flowering early are old stools of the previous year pulled to pieces and put out in October to get well established before winter. Indeed this is also the great secret in getting a good early display of *Pansies*. For a blue *Viola* to flower early nothing beats *Blue Bell*. I had very small plants of it in flower all through March, and it never ceased to bloom abundantly until it was finally cut over in the end of September. To spring gardeners *Viola Corisande* is a valuable acquisition, being very early and of a pleasing shade of sulphur. I look upon these mentioned kinds as great improvements on older sorts.—A. DEAN.

***Barbarea vulgaris variegata*.**—This truly beautiful plant is not, apparently, half so much appreciated as it deserves to be. Nothing at all in a decorative point of view, since the introduction of the *Golden Feverfew*, has appeared to equal it. As a winter plant it is simply splendid; indeed, it is only in winter that the plant appears in true character. The variegation, which is of a soft lemon or canary colour, sprinkled and blotched with green (the lighter colour considerably predominating), gives the plants a peculiarly delicate appearance, though it has nothing at all delicate in its constitution, and will thrive everywhere. One-year-old plants for small beds, and two-year-old for beds of larger dimensions, edged with some of the cushion *Saxifrages*, such as *densa*, *virescens*, or *leptophylla*, have a charming effect, and perhaps a few of the *Saxifrages* mingled with them would add to the effect, as the deep green of the *Saxifrages* sustains, as it were, the peculiar light appearance of the *Barbarea* itself. What is known in gardens as the "*Yellow Rocket*" (a fine thing), is another variety of this useful plant.—THOS. WILLIAMS, *Bath Lodge, Ormskirk*.

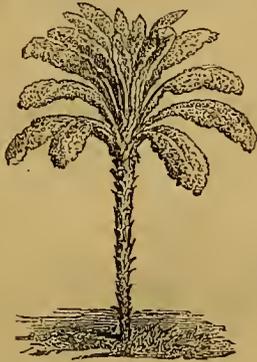
Flowers on Graves.—The public cemeteries, which we have imitated from the French, appear to have brought back among us the inclination to put flowers on graves. The custom has prevailed more or less in almost all parts of the world, according as nations and religions have been kindly. It is the Parisians who would seem to have done it away in England and Scotland. Wales, we believe, is the only part of the island in which it has never been discontinued. The custom is surely good and desirable. It does not follow that those who are slow to resume it must be unfeeling, any more than that those who are quick to do so must be necessity be otherwise. A variety of thoughts on the subject of death may produce different

impressions in this respect on different minds; but, generally speaking, evidence is in favour of the flowers. You are sure that those who put them think of the dead somehow. Whatever motives may be mixed up with it, the respectful attention solicited towards the departed is unequivocal; and this circumstance is pleasing to the living, and may benefit their dispositions. They think that their own memories may probably be cherished in like manner. Flowers, besides being beautiful themselves, are suggestive of every other kind of beauty; of gentleness, of youthfulness, of hope. They neutralize bad with good; beautify good with itself; make life livelier; human bloom more blooming; and anticipate the spring of Heaven over the winter of the grave. Their very frailty, and the shortness of their lives, please us because of this their indestructible association with beauty; for while they make us regret our own like transitory existence, they soothe us with a consciousness, however dim, of our power to perceive beauty; therefore of our link with something divine and deathless, and of our right to hope that immortal thoughts will have immortal realization. And it is for all these reasons that flowers on graves are beautiful.—*Leigh Hunt.*

THE PALM CABBAGE.

(BRASSICA OLERACEA *v.* PALMIFOLIA.)

THE tall stature and Palm-like aspect of this gigantic Borecole at once recommend it as a fitting subject for the sub-tropical garden. Rising to a height of from 6 to 12 feet, with a straight bare stem, it displays a handsome crown of large drooping leaves, which are so much puckered and frizzled and rolled inward at



The Palm Cabbage.

the edges that they appear narrow, and at some distance compound, thus causing the plant to present at first sight so much the appearance of some species of Palm, that the illusion is only dispelled by a closer inspection. The Palm Cabbage is almost peculiar to Italy, and is not very hardy in our climate. During the summer, however, it may be grown out of doors successfully, and will afford quite as good an effect as is sought for in many more expensive plants. Although some people may ridicule the idea of Cabbages in a flower garden, this plant will be quite as effective as any of the variegated Kales which have been so much praised. In the Channel Islands it is cultivated to a considerable extent in orchards, the outer leaves being largely used for feeding cattle, while the heart is much esteemed for culinary purposes.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Cleome speciosissima.—To lovers of curious or botanically interesting plants, I may recommend this *Cleome* (a representative of the Capparidaceæ) with its upturned petals, long spreading stamens, and ovary borne at the end of a long stalk. The leaflets of its elegant digitate leaves droop at night. If raised in heat, and turned out in May or June, it blooms beautifully.—R. CURTIS.

Eucnide Bartonioides.—Is this half-hardy annual so well known as it deserves to be? I have had a plant of it in bloom in a pot for several weeks in succession, and its showy flowers, of a deep lemon yellow, have been much admired, while its long continuance in bloom adds much to its value.—R. CURTIS, Kensington.

Compact White-flowered Showy Sage (*Salvia splendens alba compacta*).—I noticed several plants of this the other day at the Hale Farm Nurseries, Tottenham. Its flowers, being white, are not so attractive as those of the well-known scarlet form; but when they have fallen the bracts still remain for some time, and these are as white as the flowers themselves, and very striking. For the bracts alone it may be worth a place for variety's sake, as those of the common form are of a dull greenish colour, and not at all attractive after the flowers have dropped.—F.

SOILS, MANURES, &c.

SOILS.

IN former times there was much pretended mystery concerning soils and composts for different kinds of plants. It was no uncommon thing to meet with gardeners who believed that ingredients as numerous, if not as absurd, as were commanded to be served up in the famous witches' cauldron, were quite indispensable for some subjects; and not without most convincing reasons would they often be induced to modify or deviate from the prescriptions they had been so long accustomed to put the most implicit faith in. Many persons have been, and still are, I believe, prevented from cultivating some desired plant because they think they cannot provide the indispensable requirements. We have, however, emancipated ourselves from many horticultural prejudices and fallacies within the last quarter of a century, and not the least advancement has been the simplification of ways and means in most gardening matters; but still the amateur who relies much, and often entirely, on what is written or said on horticultural subjects, is often sorely puzzled what course to pursue when he is about to begin the culture of some particular plant or fruit, and in nothing perhaps is he more dubious and uncertain than on the question of soils. It may be that he is ambitious of imitating his neighbour in the culture of the Vine, but then perhaps he does not own yards for his friend's acres; and no wonder if he despairs when he reads up the subject and has to consider where he will procure the needful loam from an "upland pasture," the bones, dust, charcoal, horn shavings, leaf-mould, well-rotted cowdung, &c., that go to form the modern Vine border. He can afford a bit of common garden ground only, and although he is told in an introductory way by his favourite author that "the Vine will grow in any ordinary garden soil," still it is put in such a way as to leave him without hope of ever being able even to approach the squire, whose well-cropped vineries he has perhaps in his mind's eye, and so the chances are that he gives up the idea of attempting the feat altogether.

Now, to begin with the Vine, concerning which very erroneous impressions exist on some points of culture, I would assure those who are situated in the way I have described that it can be grown successfully under very ordinary conditions indeed; in fact, I will go so far as to say that much of the labour and expense incurred in preparing borders might be dispensed with in many cases altogether. I have had to do with the culture of the Vine in this country under many different circumstances and conditions. I have experimented with aerated, heated, chambered, outside and inside borders, and with mixtures of many and divers descriptions; and the result of my experience is that I consider the Vine to be one of the most accommodating of plants, and believe that wherever an ordinarily fair sample of the Cabbage tribe, the Pea, or the Potato can be grown, there also can the Vine be grown and fruited most successfully. Like the vegetables I have named, it delights in a good diet; it certainly has no objection to good fresh loam, but it is not by any means indispensable to its welfare; and the ordinary manure of the garden—such as comes from the stable or the cowhouse—is all that is needful to keep up any degree of vigour and fruitfulness. The Vine has its predilections, like everything else, and there are some soils it will thrive in better than others; but I doubt very much if many of the artificial prescriptions recommended in the preparation of Vine borders are really safe under all circumstances. Large bunches and heavy crops for a few years form, I consider, no fair criterion of success. That practice which insures the best results for the greatest number of years is the safest; and data of this kind would be more valuable than any other. So far as my own experience goes, I must say that the best and most enduring results can be obtained by the simplest means. I could point to instances of the most successful Grape-growing, where no advantages in the shape of soils were presented, more than a limited plot of kitchen garden ground, that had been cropped for half a century at least, afforded, and a share of the pigsty manure. But in the most notable instance of this kind the grower had very enlightened notions concerning the training of the Vine. He held that

its root-wants were few and simple, but he realised the importance of caring for the leaves, of keeping them green and vigorous until the end, and of not over-cropping; and certainly his success for more than twenty years back has been all he could desire. So much for the Vine: but when we come to consider that numerous section generally termed stove and greenhouse plants, we find there is no end of prescriptions and cultural directions for them. I can recollect the time when selected turfy loam and peat, &c., were considered absolutely needful for Pelargoniums; while, if we consider the exact and various proportions that had to be served up for such subjects as Azaleas, Heaths, &c., we can only think they must have been very connoisseurs indeed of plant diet. As for Pines and such select subjects as Orchids, only practitioners of mature years were considered equal to the task of catering for their wants. But such notions are, I hope, dispelled in these days; if not, the sooner they are the better, for they sadly obstruct the progress of horticulture. I do not wish to promulgate the idea that the question of soils for the various plants that come under our care is a matter of indifference; but I would have it understood, especially by those who have not every appliance at hand, that the great majority of stove and greenhouse plants may be grown successfully in common garden soils, reduced more or less with the decayed vegetable or leaf-mould which every garden affords. There are certain things, such as charcoal, lime, sand, &c., which are useful in many cases; but they are not by any means indispensable, and none of them will make up for inattention in the matter of watering, ventilation, and temperature—points of far more importance than soil. It is astonishing how little plants want when they are favourably situated as regards these matters. Plant a Vine, Pine, or anything else in the best of soil, but neglect them, and failure will be the certain result. I have at present a vinery, or rather a corridor, which was originally planted with Vines, with the object of shade more than anything else, and no border was prepared for them, more than what they could find in a chance space of ground in front and under a walk; but they grew and prospered so under these adverse circumstances, that it was considered advisable to devote the house to their culture entirely, and, for the last ten years or so, they have borne crops of fruit which, for weight and finish, I have seldom seen surpassed. Border making there has been none, while the roots have had their own way; but the wood and foliage have been cared for as much as possible, and at this date the promise for the future is all that could be desired. I could recount the same experience with Peaches, Figs, and other things. The Melon, for instance, is a plant which has received a deal of attention in the way of soils and composts, and I have tried a few experiments myself with it, but we never had better fruit than was grown in soil from the Cabbage quarter, mixed with peat soil from the Potato pit, and any other refuse which economy compelled me to use; but this material was laid upon a well-made hotbed, in which the bottom heat was well sustained, and the plants were exposed to the best light possible. As regards the texture of soils, it is still an open question whether a loose, fibry material, such as has long been recommended for fruit-tree borders and other things, is the best. I venture to think that, wherever fruitfulness is an object, a hard or firm soil is decidedly the most suitable. It has been proved that the Vine will thrive exceedingly well in a soil almost as hard as a board, if it is not allowed to get dry; that the Peach and other stone fruits prefer a hard rot medium, there seems to be now no doubt; and that the Pine-apple can be grown and fruited most successfully in a soil without any fibre in it, and rammed quite hard, I have proved over and over again, and would indeed adopt such treatment by preference. A loose, open soil in the pot culture of a great many subjects is, in fact, an evil; for the roots, following their natural tendency, make at once for the bottom of the pot, and get through it if they can; and so the great bulk of the soil is left without a root, for, once the roots get congregated in the bottom of the pot, they cannot be easily induced to turn upwards again. But by ramming the soil in the bottom hard they will permeate the whole ball in a most complete manner. We have practised this with Figs, pot Vines, Pines, Strawberries, and

other things, and found it to be perfectly successful. A hard-potted plant, however, wants more water, and it is a good plan to keep the surface stirred, and to mulch well when practicable. At one time I was accustomed to pot Pines in loose fibry turf, and I found it needful to lift the plants regularly, to prevent them rooting through into the tan so persistently; but since I adopted the hard-and-fast system I find the plants can be left for twelve months in the same positions without any danger of their rooting through, while the ball of soil in the pot gets so thoroughly filled with roots that there is a danger of laying them bare every time the plants are watered.

J. S. W.

THE HOUSEHOLD.

VISCID WHITE MUSHROOM.

(HYGROPHORUS VIRGINEUS).

THIS species, exquisite in form and flavour, is one of the prettiest ornaments of our lawns, downs, and short pastures at the fall of the year. In these situations it may be found in every part of the kingdom. It is essentially waxy, and feels



Hygrophorus virgineus (Viscid White Mushroom). Pastures, in autumn snow-white; diameter, $\frac{1}{2}$ inch to 1 $\frac{1}{2}$ inch.



Hygrophorus pratensis. Pastures, in autumn; colour, full buff; diameter, 2 to 3 inches.

and looks precisely as if made of the purest virgin wax. The stem is firm, stuffed, and attenuated, and the gills singularly distant from each other; it changes colour a little when getting old, at which time it is unfit for culinary purposes. A batch of fresh specimens, broiled or stewed with taste and care, will prove agreeable, succulent, and flavorful eating, and may sometimes be obtained when other species are not forthcoming. Several allied species enjoy the reputation of being esculent, notably *H. niveus*; and report speaks favourably of *H. psittacinus*—a highly ornamental yellow species, with a green stem, sometimes common enough in rich pastures (and said to be very suspicious).

“Pileus fleshy, convexo-plane, obtuse, moist, at length areolato-rimose; stem stuffed, firm, short, attenuated at the base; gills decurrent, distant, rather thick.”—*Grav. t. 166.* “On downs and short pastures. Extremely common. Mostly pure ivory-white.”—*Berkeley.*

HYGROPHORUS PRATENSIS.

This is very common on downs and short pastures. Pileus tawny or deep buff, sometimes nearly white. Probably esculent.

Pileus convexo-plane, then turbinate, smooth, moist; disc compact, gibbous; margin thin; stem stuffed, even, attenuated downwards; gills deeply decurrent, arcuate, thick, distant.

FRENCH MODE OF PRESERVING THE BOLETUS.

THE Fungus known as *Boletus edulis* is very common in Périgord, the peasants calling it, in their dialect, *Bontarel*. It creates a considerable amount of trade at two seasons of the year—in July and September. In 1871 over 137 tons of these Fungi were gathered, part of which were exported, and the rest consumed at home, or preserved. During the two seasons, you may see in the early morning numbers of peasants with sticks across their shoulders, at the extremities of which are suspended enormous baskets full of these Fungi, destined for the markets. They entirely monopolize this commerce, and cultivate it most cleverly. A little boy of ten years of age would fill his basket with them before you had laid your hand on one, unless it might be a bad kind, which the knowing little fellow had archly pointed out to you. The season at which the *Boletus* is most abundant in the markets is in September, and the French housekeepers lay in a good provision of them for winter use. They are prepared in many ways. The following I can answer for as being an exceedingly good way, and it is used in my own household. Choose the *Boletus* of a middle size; take them one by one, and carefully see that they are not spoiled, and have no holes in them. For preserving they must be fresh and whole. Then take a sharp knife, and cut off the stem of the *Boletus* quite close to the head. Place the heads on one side and the stems on another, for both are good. Take a clean cloth and wipe the heads one by one, being careful not to break or bruise them. This done, place on the fire a saucepan of water; when it is boiling, throw the *Boletus* (only the heads) into it, as many as the saucepan can hold, and leave them for six or eight minutes; then take them out with a skimmer at the moment when you see they are becoming white, and put them on a table, where you leave them until they are well drained. Take an earthenware jar, place at the bottom of it a layer of kitchen salt about the thickness of the little finger; then place a layer of *Boletus*; cover them with a layer of salt, but less thick than the first one, and continue thus until the jar is filled; cork it well, and cover the top over with linen or paper. One month after they are fit for use. In taking the *Boletus* out each time for use, the jar must be well corked down. The Fungi ought to be taken out the evening before they are required to be cooked, and put into fresh water, which must be changed three or four times to get the salt from them. Those which remain in the jar must be always well covered with the salt, which, of course, will be dissolved. The stems should be stripped of the skin, then strung on a piece of fine cord, and either hung up in the sun or placed in the oven to dry for a few minutes; this is sufficient to keep them all the winter. Before using they must be placed in cold water for a few hours.—GAGNAIRE FILS AÎNÉ, in *Revue Horticole*.

COPPERY VEGETABLES AND FRUITS.

SOME years since, says the *Lancet*, the practice of colouring or greening pickles, bottled fruits and vegetables, as well as those in tins, with poisonous salts of copper, was almost universal. Subsequent to the extensive exposure made in the reports of our Analytical Sanitary Commission the practice very much diminished, but the evil still exists to a considerable extent. Perhaps it was in the case of vegetables preserved in tins, as Peas, Beans, and mixed vegetables, that the greening was most practised, these articles being largely imported into this country from France, although some of our own makers were not free from blame in this respect. Long ago, a well-known London firm very properly refused to sell these coppery articles, and supplied to their customers only the vegetables in their natural and uncoloured condition; and to this line of conduct they still adhere, although under considerable difficulties and not without loss to themselves. Not long since the parties in question put into our hands a whole pile of letters from customers remonstrating with them about the colour of their Peas, the *petits pois* of the French, and stating that their clients, the public, were dissatisfied with them, and that they were unsaleable. We here reproduce a portion of one of the letters in question, the first which came to hand: "We are sorry to inform you that our customer has returned the case of *petits pois* on account of their bad colour; it is consequently thrown on our hands, and we shall be glad if you will take it back, as we have no sale for a second quality. If you have anything better, we shall be glad of your quotation, but they must be perfectly green." We need scarcely state that the manufacturers in question declined to supply the unwholesome if not poisonous article required. It is thus seen that the blame of the consumption of these coppery vegetables rests not merely with manufacturers, but with retail dealers and the public, and still more particularly with professed cooks, who ought to be better informed as to the nature of

such articles. The addition of copper to green preserved vegetables and fruits no doubt renders their presence more pleasing to the eye while uncooked, but when dressed the colour often becomes, especially in the case of bottled fruits, of a deep and unnatural blue-green, which is anything but agreeable, while the taste is at the same time very greatly impaired.

GARDENING ROUND LONDON.

(DURING THE PRESENT WEEK.)

BY OUR SPECIAL REPORTER.

PRIVATE GARDENS.

The Flower Garden.—Laying down turf, remodelling flower-beds, constructing rockeries, and making and repairing walks, are operations now being performed whenever the weather is favourable, as is also the planting of Conifers and other sorts of evergreens. Amongst Conifers, *Retinosporas* are deservedly coming into favour. *R. obtusa*, called by the Japanese "The Tree of the Sun," and *R. pisifera*, a kind with beautiful feathery foliage, are the two to which most attention is being paid. In addition to these there are also some dwarfier ones, as well as prettily variegated forms of this class of Conifer. *Sequoias* of different kinds are also being transplanted, as is likewise the Maidenhair tree (*Salisburia adiantifolia*), which is perfectly hardy and very ornamental, though comparatively scarce. The Umbrella Pine (*Sciadopitys verticillata*) is also as hardy as any Conifer, and, from its peculiar habit, it is quite a distinct kind. Other evergreen plants, such as Hollies, evergreen Oaks, Magnolias, Prunuses, *Rhododendrons*, *Berberis*, *Skimmias*, *Pernettyas*, *Ericas*, &c., are also being lifted and transplanted, as are likewise many deciduous trees and shrubs; indeed November is the best time of the whole year for moving deciduous trees, and September for evergreens. Amongst deciduous ornamental shrubs or small trees, the different coloured Hawthorns stand in the foremost rank; also *Cydenia japonica*, whose brilliant red flowers, either when grown in the form of a bush or when planted against a wall, are so charming in spring. Magnolias, if necessary, may also be moved now, likewise *Dentzias*, Lilacs, Honeysuckles, Japanese Maples, Almond trees, double flowering Cherries, *Laburnums*, *Forsythias*, *Spiræas*, *Roses*, *Philadelphuses*, *Ribes*, *Güelder Roses*, *Weigelas*, and many other kinds of forest and lawn trees.

Conservatories.—These are now everywhere gay with *Chrysanthemums*, which are kept moderately moist, and all good suckers are taken off for purposes of propagation as often as they can be obtained. *Veronicas*, such as *Andersonii*, also contribute nobly to our stock of plants at present in bloom; they succeed equally well both in pots and planted out. Under the latter system the plants, having free root-room, make stronger growth, and consequently more flower-spikes. *Cyclamens* and Chinese *Primulas* supply well our immediate wants, but their season of greatest beauty will not be for some weeks yet. Succession plants of these are kept in cold pits. Zonal *Pelargoniums* are still yielding a fair quantity of flowers, especially early struck cuttings that have been established in pots for some months, and likewise early bloomed specimens that were cut back in July. Among *Heaths*, autumn *gracilis*, *colorans*, *formosa*, *caffra*, *Lambertiana*, some plants of *melanthera* and *hyemalis*, are the finest just now. *Camellias* are coming into flower without being forced, but forced plants furnish the greatest amount of bloom. Some Cape bulbs are being repotted. *Cinerarias* and *Calceolarias* are kept in cool pits, free from drip and moderately moist. Australian tree Ferns are yet allowed a good supply of moisture, for when they are grown in cool conservatories they are late in making and perfecting their fronds, consequently any sudden curtailment in the way of water would injure them. Deciduous plants, as their leaves fade, are kept rather dry, and are afterwards placed under stages. Japan *Lilies* are being repotted and placed on the floor along the back of greenhouses; no water will be given to them for some time. *Bouvardias* are useful for conservatory decoration; but where quality of bloom is sought for, the temperature of an intermediate house is given them.

Stoves.—In these *Aphelandras* are now well furnished with charming orange-red flowers, which, together with the beautiful blossoms of different kinds of *Epiphyllum*, make stoves quite gay. Although *Epiphyllums* are generally considered to be greenhouse plants, they only open their flowers satisfactorily in a stove, or at least, in an intermediate temperature. Individual blooms of these when used in bouquets require to be wired. *Ixoras* are also blooming pretty freely, notwithstanding the lateness of the season. Such of them as require repotting receive that attention, and are afterwards plunged for a time in a moderate root temperature. *Euphorbia jacquiniæflora* and *Poinsettia pulcherrima* are plunged in gentle bottom heat near the glass. Although small plants of *Poinsettia*

are the neatest, tall ones are considered to produce the finest bracts. *Mussaenda frondosa* and *Luteola* form fine companions to the *Poinsettias*. Some of the *Echmeas* are still flowering freely, and enjoy a warm moist corner in the stove. Fine foliaged plants even now appear finer than they did earlier in the season, the leaves of *Crotons*, *Dracenas*, variegated *Pine-apples*, &c., being beautifully coloured. The syringe is entirely dispensed with whilst the weather continues so dull, but moisture in the atmosphere is maintained by sprinkling the floors. The leaves of some of the plants in stoves are being washed, also the pots and stages, indeed everything is made to assume as pleasant an appearance as possible.

Pine-apples.—Queens are now over in some places, and the supply is maintained by means of *Cayennes*, *Jamaicas*, and *Providence*. The three latter, indeed, are superior to the Queen for winter fruiting; some Queens, however, are in their first swelling stage, others are flowering, some are expected to flower in March, and others later if they can be kept back, besides the ordinary succession stock. Of smooth-leaved *Cayennes* and *Black Jamaicas* a good stock is not so readily obtained as of Queens, as they do not form suckers so freely; they are therefore commonly kept in pots, after the fruit has been cut. Young stock is kept comparatively dry, but not too much so, as by so doing it would be encouraged to flower prematurely, and the result would probably be abortive fruit. Indeed, growers generally have arrived at the conclusion that it is wrong to keep Pines too dry between November and February.

Vines.—The earliest forced *Grapes* in some places have been thinned, and are now larger than good-sized Peas; such early forcing is, however, not thought advisable, and should only be resorted to when Vines are to be removed in spring. The *Grapes* are expected to be ripe in March, and to succeed those kept in bottles. Pot Vines are started in a gentle bottom heat. Vines planted out have in many cases broken well, others are being started in succession, and on some the old *Grapes* are still hanging. Vines in general have been pruned and painted, the canes unfastened and bent down along the front of the house, so that they may break more uniformly when started.

Miscellaneous Forced Fruits and Vegetables.—*Musa Cavendishii* has, in some places, been planted in light houses in a good yellow loam enriched with dung. They are kept growing throughout the winter; they flower in spring, and ripen their fruit towards the end of summer or early in autumn. A stove temperature is maintained for them. From *Peach* and *Nectarine* trees old leaves are being removed; but the trees are not yet pruned. *Cucumbers* are well supplied with heat and moisture; but the latter is considerably less than in summer. *Rhubarb*, *Seakale*, and *Asparagus* roots are being taken up in succession for forcing. *Endive* is planted 10 or 12 inches apart in pits, and, as required for use, is either lifted and kept for a time in the *Mushroom* house or is blanched by inverting a flower-pot over it where it is growing. *Chicory* and *Dandelions* are being blanched for salading in *Mushroom* houses. Small salads, such as *Mustard* and *Cress*, are sown weekly, in such proportions as may be necessary.

Hardy Fruit and Kitchen Garden.—*Carrots* and *Beet* are lifted and stored away in pits or in sheds or cellars free from damp. The roots are not laid thickly over one another, but in ridges about 2 feet deep, and a little moderately dry sand is scattered over and amongst the roots. *Cauliflowers* in frames are allowed plenty of air in favourable weather. Plants of this esculent in pots are placed on the floor, near the glass of *Peach* houses and *vineries* at rest. *Lettuces* in frames have the sashes removed in fine weather, and tilted up a little at night. Early *Potatoes* are being planted in south borders. An early sowing of *Peas* and *Beans* is made on south borders. *Shallots*, *Garlic*, &c., are being planted, and autumn-sown *Onions* weeded. *Broccoli* are lifted and laid in with their heads facing the north. *Cauliflowers* forming hearts are lifted and taken indoors, in order that frost or cold rains may not injure them. Fruit tree and bush pruning is being assiduously proceeded with. Manure is being wheeled on to vacant ground, which is then trenched or roughly dug. Protecting materials are laid around the necks of *Globe Artichokes*, newly-planted fruit trees, and over the crowns of *Asparagns*, *Seakale*, *Jerusalem Artichokes*, &c. *Parsley* is being protected with hoops and mats.

NURSERIES.

Indoor Department.—Washing plants and staking them form the principal operations at present in this department. *Chrysanthemums* being now in perfection are transferred to such houses as will show them off to best advantage, and the young sucker and side shoots are taken off them as required for cuttings; these are also sometimes sold as they are taken off. Young *Palms* are being raised from seeds planted about an inch apart in seed pans filled with loam, leaf-mould, and sand. These pans are then placed under

stages or in any situation in stoves in which they can be conveniently stored. Those that are up are placed near the glass, and such as are ready are potted singly into thumb and small sixty-sized pots. *Palms* of all kinds are kept gradually growing. *Dracenas* are potted off from the cutting pans as they attain the length of 4 inches. Any cuttings of stove plants that are well rooted are potted off singly. Those not sufficiently strong to support themselves, from the great weight of their leaves, such as the *Ficus*, are staked. Cuttings of hardwooded greenhouse plants are kept in a night temperature of 45°. *Passion-flowers* are being grafted, stove kinds on *P. edulis*, and greenhouse ones on *P. acerulea*. Seedling *Aralias* are potted off and kept in a stove temperature. *Dieffenbachias* are cut down and are subjected to an extra high root temperature, to induce them to start afresh. The tops are used as cuttings, and any naked piece of the stem also removed is cut up into pieces and used in the same way. *Anthuriums* of different kinds are being sown in glass cases set inside of stoves in pans of light peaty soil, or on finely chopped sphagnum. *Rhododendrons* for stocks for grafting on are potted and placed in a close frame or warm greenhouse. Grafted *Camellias* and *Citrons* are kept in a close frame within a pit, whose night temperature ranges about 45°. *Carnations* are being lifted from layered stools and the separated layers repotted. The finer kinds of *Alpine* and herbaceous plants are placed in frames and protected from frost and ungenial showers. *Pansies* planted out in frames are kept free from decaying leaves, which generate disease. Bedding plants in pits and frames are also kept free from damp, which is more destructive in November and December than at any other time during the winter.

Outdoor Department.—Little is being done in this department beyond lifting and packing plants for the execution of orders. Where a piece of ground is nearly cleared of the plants growing thereon, those that remain are lifted and laid in in another quarter, and the ground lately occupied by them is manured, trenched, or dug over, and replanted with such plants as are intended to be kept there another season. *Briar* stocks are being planted.

MARKET GARDENS.

Operations in these are almost suspended, in consequence of the cold and sodden condition of the soil, through excessive rainfall. Manuring, digging, ploughing, and planting are actively pushed forward whenever the weather is favourable; while it continues so wet, vegetables are prepared for market, and *Radish*, *Broccoli*, *Cauliflower*, *Cabbage*, and *Turnip* seeds are thrashed. *Onions* and fruit in storehouses are turned over, and any that are spoiling are removed. The third *Celery* crop is being finally earthed up, and *Asparagus* ridges are levelled. In the case of ground cleared of *Cabbages* or root crops, all leaves belonging to these plants are dug into it along with the dung. The best of the *Coleworts* are selected for seed, and are transplanted in lines between two slightly raised ridges. The best of the root crops are similarly treated. Amongst *Lettuces* and *Cauliflowers* in frames some sharp sand is sifted, to preserve the plants from damp. *Rhubarb* roots from amongst fruit bushes and some other open quarters are lifted for forcing, and the ground is manured and ploughed. *Seakale* roots are also lifted for the same purpose. In the case of *Seakale* the rows are about 15 or 18 inches apart, and every alternate two are lifted for forcing; the others are left for blanching in spring, where they stand. *Black Currant* and *Gooseberry* bushes are being pruned, and the best of the prunings are saved for cuttings. The ground amongst them is being roughly dug. *Strawberries* for forcing are placed in frames, in order that lights may be placed over them in the event of frost. Where they are planted out, lime is scattered over the ground.

THERE is a beauty about autumn leaves that is often overlooked, though it is well worth preserving. To have them in their best condition they should be dried as rapidly as possible after being gathered, or they will soon lose their brilliant colours. They may be placed between the leaves of some book that is of little value or between folds of paper, that which is porous and unglazed being the best. The drying is sometimes hastened by passing a warm flat-iron over the paper. Change the paper every day until the leaves are quite dry, and then keep them between the leaves of a book, or in folds of paper, under a moderate weight, until wanted for use. They may be tastefully arranged upon white cardboard, in the form of wreaths, bouquets, &c., or they may be used to decorate lampshades, to surround pictures, &c. The leaves are first carefully oiled with boiled linseed oil, upon the upper side only. A little oil is applied with a bit of cloth or a brush, and the surplus wiped off with a soft cloth. This increases the brilliancy of the colours, as well as their permanency. They are afterwards fixed in their places by means of strong mucilage.

THE GARDEN.

—o—o—o—
 "This is an art

Which does mend nature: change it rather: but
 THE ART ITSELF IS NATURE."—*Shakespeare.*

THE SIX OF SPADES.

On the Happiness of a Garden, by the Curate (concluded).

It is written that, in the year 1533, the General Chapter at Cisteaux sent a commissioner to Scotland, to visit and reform the monks at Melrose, who, with other charges, were accused of possessing each one a pleasure-garden of his own. And the historian proceeds to say that, when summoned to a meeting at Edinburgh, these clerical gardeners defended themselves with great skill and ability. I should like to have heard them plead. I see in imagination a bright-eyed brother, producing reverently an ancient Hebrew manuscript, and asking the commissioner to note the 8th verse of the 2nd chapter of the Book of Genesis, "And the Lord God planted a garden eastward in Eden; and there He put the man whom He had formed;" and another comes forward with parchment pages of Greek, and he points to the word Gethsemane, and to the 41st verse of St. John's 19th chapter, "Now in the place where He was crucified there was a garden; and in the garden a new sepulchre, wherein was never man yet laid." And then I hear them urge that a garden was to them a place of holy recollections, of humble penitence, of faithful hope, as well as of refreshment, and rest, and peace.

Grave and solemn though his vocation be, the country parson "nevertheless" (as good George Herbert writes), "sometimes refresheth himself, as knowing that nature will not bear everlasting droopings," and "because all men shun the company of perpetual severity;" and where shall he refresh himself so healthfully, so harmlessly, as in a garden?

Let me try to prove this yet more practically—to assert not only the happy influence but the profitable use of horticulture, by borrowing friend Chiswick's Fairy and Gourd, and by taking you in imagination through my garden-ground. And I have a favour to ask, before we step into the Pumpkin—do not think me Pharisaic when I speak of the little gifts which go from my garden to the poor; do not liken me to that proud young Horner, who displayed his fruit, and withal his arrogance; do not regard me as the trumpeter of my own praises, but as a true knight coming forth to do battle for our Royal Lady, our Flora, the Queen of Spades!

Enter first, if you please, my kitchen-garden. In front of that wall, which has a southern aspect, and in a warm border, between wall and walk, I raise annually from seed such an abundance of greens,* Cabbages, Cauliflower, Lettuces, &c., as supplies not only my own requirements, but many a cottage-garden besides; while in the dry sheds, built behind this wall, I have a good store of Onions, Beet, Carrots, Turnips, &c., which, supplemented from those long rows of Celery, and with certain yet more nutritious adjuncts from the butcher (a sober, married man, as Mr. Grundy knows, and a very happy contrast to poor "Sammel Cox"), make the soup, so welcome during these winter months, in those same cottage homes.

Now step into my miniature houses of glass. Nearest to the boiler (a cruciform, from Meiklejohn of Dalkeith) is my hot-house, about the size of a saloon railway-carriage. I make no attempt, of course, to grow stove-plants; but it is not without its bits of beauty—the silver-leaved *Fittonia*, the red-veined *Gymnostachium* (which poor Pearce sent us from Peru); the narrow-leaved *Croton*, weeping gold; the velvety *Gesnera* (so named by the great Linnæus after his brother botanist, Gesner of Zurich); the bright *Poinsettia*, with its scarlet spathes; the first batch of *Gloxinias*, just showing leaf; the few rare Ferns, *A. Farleyense* (not the "big one," awful in Mr. Evans's ears), *Cheilanthes elegans*, and other gems; the lovely and abundant

* I cannot write the word without recalling a speech made by a poor old woman in Worcestershire to one of my college companions:—"Yes, Mr. Allen, I've had a deal o' trouble. First, I lost my sister, and then I lost my pig. But there's one thing I ought to say, and say it I will—the Lord's been pratty well on my side this winter—for greens!"

Eucharis and *Pancreatum*, from which, and from the *Stephanotis*, on the roof above, many a sweet maid has had her bride's bouquet. But I chiefly use my tiny stoves as a propagating and forcing house; and in that central bed of tan, warmed by the pipes below, seeds germinate, bulbs "spindle," grafts "callus," and cuttings strike, with a sure success and speed. Better than all this—I force early Strawberries here, which, after giving me intense pleasure by their fragrant beauty, are, invaluable in cases where a failing appetite has often longed and craved for them. A good doctor once sent a dozen miles for the same number of berries, and he told me afterwards that his patient "would gladly have paid a pound a-piece for them."

From the Vinery, which adjoins my stove, and the greenhouse, which completes my "range," I have, beyond the great delight of watching the Vines break into leaf, and the fruit develop, and flower, and colour; and beyond the constant refreshment, which I find in my plants, my Primulas and Hyacinths, my Roses and Geraniums and Fuchsias—a far more ample and continuous help in ministering to the sick. A great number of invalids will eat Grapes when they can eat nothing else; and several have told me that this fruit was the first thing which they seemed to relish in the earliest stage of their recovery. As for flowers, it is needless to expatiate on the comfort which their brightness and their sweetness bring to the ailing, "for all who have ever suffered (and who has not?) know their cheering influence in the sickroom."* "Oh, how I love them!" once sighed a dying girl to me. "I dreamed last night that He stood by them and said, 'Consider the Lilies, how they grow.' I think—I feel sure—there will be flowers in heaven." And these words are carved upon the stone by her grave:—"My Beloved is gone down into His garden, to gather Lilies. I am my Beloved's, and my Beloved is mine."

Let us leave now my crystal palaces, and spend a few minutes in my open ground. A small space, much smaller than it seems, because the surface rises and falls, and no boundary lines are seen, but full of treasures precious beyond words to me. By lowering here, and by raising there, and by a little thoughtful arrangement of bank and wall and shrub, I have realised a score of cozy nooks and corners, in which I have more privacy, and, as I believe, more pleasure than can be found in your great modern gardens, cleared by the axe, and prepared by spirit-level and line and compass, for a vast geometrical design. There, you see, is our little fernery (I say our, because I have an excellent coadjutor, fellow-gardener, and forewoman, in my sister, Rose); there, as her name reminds me, our bank of Roses, on which our critical President has smiled his praise; there our rockery, our "Switzerland," as we call it, in honour of those exquisite Alpine plants; and close to Switzerland (let Pinnock protest as he may), "America" (I made America myself last autumn with six cart-loads of peaty soil), with its *Andromedas*, *Azaleas*, *Kalmias*, and *Rhododendrons*, bordered with the *Ericas*, roseate and white, and with that delicious spice-scented *Daphne Cneorum*! Here and there, as you follow our tortuous walks, are beds, with *Evergreens* and flowering shrubs in the centre, and perennial and herbaceous flowers around, the latter covering them to the Grass, save where, in some few exceptions, you see a vacant space of some 2 or 3 feet in width, devoted in the spring and summer months to the plants known as "bedding-outers." There, under my study-window, which has all the morning sun, the Violets bloom half the year; and there, opposite, close to the Yews, and under the shade of melancholy boughs, the Lilies of the Valley scent the vernal air.

There remain two small inclosures which we have not yet explored. In the first one of these, which we call our garden of memories, we have, on the right as you enter, a border of shrubs and flowers, of which every one was given to us by some dear relation or friend (you will find that the *Souvenir d'un Ami* Rose has been a frequent choice), and many placed there by the hands which gave. Each has a special history, and brings its welcome thoughts; each whispers in the ear that word, which you may see, carved in Hebrew letters, on the stone before you, with *Forget-me-Nots* around its base,

* At the risk of seeming to be egotistical in commending an article which speaks very kindly of my "Book about Roses," I venture to advise all gardeners to read a paper "On Gardening," which they will find in the *Cornhill Magazine* of October, 1872.

Mizpah—"The Lord watch between me and thee, when we are absent one from another."

On your left is a collection, also very dear to us, of plants, Ferns, and flowers, brought from distant places (Scotland, Ireland, Wales), and from many a pleasant home—memorials of our happy wanderings amid the fairest scenes of earth, and reminding us also that the brightest day of every pilgrimage was that which brought us back to—our garden.

The last small plot to which I invite you is our garden of Palestine, wherein we have collected many of the trees and shrubs and flowers which are mentioned in the Holy Scriptures, aware, of course, that in several instances, as, for example, the Apple and the Juniper trees, the Hyssop, the Lily, and the Rose, our specimens are identical only in name. For this reason we have included both trees and flowers, such as the Apricot and the Anemone, which, although not mentioned in the Bible, are found in abundance upon the sacred soil, and were probably referred to and intended by words imperfectly translated in our tongue. Here, then, are the trees, the grasses, herbs, fruits, and flowers, consecrated to our ears by Prophet and Psalmist, and by our LORD HIMSELF—the Cedar and the Cypress, the Oak and the Elm, the Fir tree, the Pine tree, and the Box tree together, from which at Christmas, and Easter, and other holy seasons, we "beautify the place of the sanctuary;" there, upon the southward wall, grow the Vine, the Fig tree, and the Gourd, and close by, the Myrtle and the green Bay tree; and there, where our village brook forms the boundary of my garden, is the tree planted by the water side, the Willow weeps, as by the rivers of Babylon—the Reed is shaken by the wind. The Passiflora, brought from under glass, and hardened for the purpose, has shown in the heat of summer those wondrous emblems of the Passion upon that old stone cross. I need make no comment upon these things. There is neither speech nor language, but their voices are heard among them. Indeed, I should fear that I had already sermonised too much, did I not know that your heart is with my heart, and loves these sacred thoughts. How could I be here, did I not feel myself with those who forget not Jerusalem in their mirth—with Christian gardeners, who hear "the voice of the LORD GOD, walking in the garden," and speaking to them, not in wrath, as to the first gardener, of Paradise Lost, but, in all the tenderness of redeeming love, of Paradise Regained.

S. R. H.

NOTES OF THE WEEK.

— THE finest things we have lately seen in the open garden are some specimens of the variegated *Elæagnus* in Mr. Bohn's garden at Twickenham. Fine as are our variegated Hollies and other variegated shrubs, we have not seen one so striking as those. Mr. Bohn's specimens of *Elæagnus reflexa variegata* and of *E. aurea*, probably the finest in the country, are so large that they speak at once of the merits of these plants, whereas the small plants we generally see do not attract any particular attention.

— We learn that Mr. Bass has made another munificent gift to Derby in the shape of a donation of £5,000 towards the erection of a free library. Mr. Bass, it will be recollected, has already given a recreation ground of the value of £4,000 to that town.

— THE new conservatory climber, *Tacsonia exoniensis*, which received a first-class certificate this summer at Birmingham, is in fine bloom in Mr. Veitch's nursery, at Exeter. Even in a cool greenhouse it has now upwards of a hundred flowers on it in different stages of growth.

— We understand that Mr. Peacock, of Sudbury House, Hammersmith, has just purchased the collection of Cacti which belonged to the late Mr. Seyfang, of Peckham, among which are some fine specimen plants.

— We learn from the *Journal of Botany* that a Flora of Portugal is announced as in preparation by Senor Baroo de Castello de Paiva. It will include all the additions made since 1804, the date of Brotero's excellent Flora Lusitânica.

— WE have just seen specimens of *Celosia pyramidalis* grown by Mr. Yates, of Sale, near Manchester, that strikingly illustrate the good results of careful seed saving. Raised from seeds saved from an inferior "strain," this *Celosia* forms a large rambling plant, with little bloom on it. Mr. Yates's plants, on the contrary, are comparatively dwarf, forming literally fountains of rich crimson and orange

sprayed blossoms from root to top, where they congregate in to a compact pyramidal head, measuring upwards of a foot round. Seen under bright sunlight, the blossoms of this *Celosia* are extremely effective, and when cut they will keep good for a month or six weeks. Plants of it raised from seeds sown in March should be treated similar to those of the common Cockscomb.

— WITH the assistance, it is said, of the Commons Preservation Society, efforts are being organised for the preservation of Coulsdon and Kenley Commons, near Croydon.

— THE Government of Colombia, or New Granada, has extended for five years the grant to Mr. José Triana, to enable him to publish in London, in Spanish, "La Flora Colombiana," and the Botanical Geography of Colombia.

— THE crop of Olives at Nice is remarkably abundant this year and is estimated, for the district corresponding with the former province, at a sum of twelve millions. This is the largest yield remembered during the present century.

— FORCED flowers are now beginning to occupy a prominent position in Covent Garden Market. Among them are some fine examples of Lily of the Valley, pots of Tulips and Roman Hyacinths; also spikes of white Lilac bloom, produced by the common pink Lilac, forced in darkness.

— A LARGE consignment of the handsome *Lilium Washingtonianum* has reached this country, and, as will be seen by an advertisement in another column, will be sold at Stevens's on the 5th of December. A quantity of other rare Lilies will also be brought to the hammer on the same day.

— DR. KUHN has found, says an American paper, that the fungus which causes the Potato disease (*Botrytis* or *Peronospora infestans*) only propagates itself while the Potato plant is growing. Therefore the Potato tuber receives its infection from the haulm or stems, and one tuber cannot communicate disease to another.

— AS Mr. Peacock, who so generously offered 20,000 of his succulent plants for charitable purposes, has had applications from persons supposing the plants were for sale, we may state that this is not the case. On the contrary, they are given away gratuitously, and wholly for charitable purposes.

— TRUFFLES appear to be very abundant this year. The Department of the Drôme has produced £72,000 worth; the Lot £96,000; Dordogne £60,000; Aveyron £24,000; Vaucluse £16,800; and Charente £20,000. The entire produce in France is estimated at from £720,000 to £800,000.

— A COMPLETE catalogue, list of prizes, awards of medals, &c. at the late Birmingham meeting of the Royal Horticultural Society, has just been issued, and as many exhibitors and others may like to secure a copy for preservation, we have been requested to state that they may be obtained, post free, from Messrs. M. Billiog, Son, & Co., printers, Birmingham, by forwarding address, and fourteen penny postage stamps.

— MESSRS. Mowlem & Co. have already opened a culvert in Victoria Park, connecting the large lake with the main sewer, through which the water is being drawn off. The culvert of the lower lake is constructed with large earthenware pipes, and between the joints the roots of trees have insinuated themselves, and prevent the slightest outflow of water. This will necessitate the pulling up and relaying of the entire length.

— A NICE plant of *Vaccinium erythrinum* is at present in flower in Mr. Cutbush's nursery at Highgate. This is an evergreen greenhouse plant, dwarf in habit, and the leaves of the young wood at this season are very ornamental, being of a bright reddish colour changing to green in spring. The flowers are dark crimson, the base being of a rich plum colour. For the last twenty-five years Mr. Cutbush has had several of these plants, but none of them ever produced flowers before. There are specimens of this *Vaccinium* in this nursery much larger than the one now in flower. Their chief value in the way of ornament depends upon the brilliant colouring of the leaves of the young wood.

— THE vestry of St. George the Martyr, Southwark, received recently a letter from the chairman of the Commons Preservation Society, stating that Mr. Francis Peek had promised to contribute £7,500, provided that the governors of Dulwich College would dedicate for public use 150 acres of their estate, and form and maintain the same as a park. The governors of Dulwich College had come to the conclusion that they would not be able, under their Act of Parliament, to apply any portion of their estate as desired. As, however, a new scheme for the organisation of the estates of the charity was about to be considered, the society desired the vestry to assist them in securing the means to obtain a new park for South London. A motion approving of the formation of the park was adopted by the vestry.

THE INDOOR GARDEN.

COOL ORCHID GROWING.

(Continued from p. 441.)

ANOTHER great requisite in the culture of all Orchids, more especially the cool section, is full and free ventilation, not only during the daytime but also through the night, of course taking precautions against cold draughts, by tacking coarse tiffany or perforated zinc over the openings. If ventilation is beneficial during the daytime, why not during the night? I never could see the reason why plant-houses should be almost hermetically closed during night-time, and kept so close and hot as they generally are. A cool and airy night temperature is far more conducive to health and vigour than a hot and close one, more especially for *Odontoglossa*, *Oncids*, and *Orchids* generally from the Mexican or Peruvian Andes. J. Bateman, Esq., years ago promulgated the system of cool treatment as being applicable to a great number of very beautiful and interesting *Orchids*, and in his own practice, with one of the finest collections in the world, he demonstrated its usefulness, and gave an impetus to cool *Orchid* growing which is at present rapidly on the increase. Having visited many establishments where cool *Orchids* are grown, I must admit that I never found them the reverse of healthy, except where moisture was sparingly applied or a dry atmosphere maintained during the winter months. I would more particularly recommend imported *Odontoglossa*, which happily are now imported in large quantities, to be potted and placed in a cool house, in order to start them into growth. If healthy strong pieces, they will start far better than in a hot temperature. Imported plants do not require so much water as established plants; still a moist atmosphere must be preserved, in order to prevent loss from the bulbs by evaporation. Carefully shade them from the bright sunshine, or evaporation will impair their energies, even if a humid atmosphere is maintained at the same time. This last remark is worth the attention of plant growers, its truth having been demonstrated by no less an authority than Mr. McNab, of the Edinburgh Botanic Gardens. I am well aware that respiration is essentially requisite, more especially in the case

of strong vigorous plants, but to expose unrooted or sickly plants to the sun is the quickest and surest way of thoroughly sapping their life's blood, and can only end in extreme debility of constitution, from which they rarely again recover, and in some cases actually die. It may be argued that in the tropics certain species are fully exposed to the sun, and flourish in the most exposed positions best. This I would not deny, because I have elicited it from gentlemen of integrity, who themselves have gathered specimens of *Dendrobium*, more especially of *D. formosum*, in like positions. Still in the tropics they are in a state of nature, with the air freely playing round them, and are not subjected to the inter-

vention of a glaring crystal roof and a close unhealthy atmosphere rendered arid by the dry and unnatural heat emanating from the hot water apparatus. It has been justly observed that "circumstances alter cases," and this is especially correct in the case in point, where on one side we have a plant in a state of unfettered, or rather, unperverted nature, and on the other, the same plant perhaps, surrounded by a complicated series of artificial circumstances and conditions, between which a continual warfare is going on instead of perfect harmony and peaceful repose.

Again, we are frequently told that *Orchids* require houses to themselves, but really, in all truth, a greater or more absurd fallacy could not easily be promulgated. One would almost be led to infer from this that *Orchids* were exclusive, and occupied some particular portions of our globe, to the utter exclusion of all other vegetation. We can grow the *Palms*, *Melastomads*, *Begonias*, *Ferns*, and *Peperomias* in an ordinary plant stove, but

the *Orchids* which have grown side by side with them in their native habitats must be placed in a structure called an "Orchid house" ere they can be expected to succeed in our gardens at home. There are hundreds of plant stoves in this country in which *Orchids* might be grown as well as in the best *Orchid* house ever made, were it not for the superstitious principles entertained by many on the above point.

It may be taken as a rule that wherever tropical *Ferns* and fine foliage plants succeed, there also *Orchids*, or at least many of them, would luxuriate often with far greater chances of success than when placed in our so-called "Orchid houses,"



A Bouquet of Cool Orchids.

which, however desirable, are not absolutely essential to Orchid culture.

HINTS ON PURCHASING ORCHIDS.

In buying Orchids, there are a few important questions to be considered. Some amateurs prefer to commence with established plants, and these are the best in the generality of places, more especially where no regular Orchid grower is employed; but where there is already a good established, healthy, blooming collection and a skilful and intelligent Orchid grower, a few good imported plants may be added from time to time, and they will not be found so difficult to establish as some would have us suppose. The truth is that there have been thousands of beautiful Orchids from the higher ranges of the South American continent or Northern India killed by being subjected to a high temperature and an arid unhealthy atmosphere. Orchids are naturally very tenacious of life, far more so than many Ericas and other hard-wooded plants, still hundreds are annually killed by being exposed to too much heat and far too little moisture. Hence we are often told that Orchids are very difficult to establish and expensive to manage afterwards. This is untrue, however, as far as cool Orchids are concerned. It is very well known that imported plants invariably make better established specimens in far less time than an old-established plant which has become debilitated by bad treatment.

There are many ways of buying Orchids, and we will just glance at one or two of these. Supposing that you know Orchids well, you may buy your own plants, being guided as to prices by any good Orchid catalogue. There are great advantages to be derived from buying in quantity, and special quotations for most of the Orchids in cultivation will be furnished on application to the principal nurserymen, who make these plants a speciality in their establishments. Some growers, ever ready with objections, will say that dozens or half dozens are too many for them, two or three being all they require. To these I would recommend that they form a sort of association in conjunction with neighbouring cultivators, buying plants in quantity which can afterwards be equally divided, to suit all parties concerned. Still many cool Orchids should be grown in quantity in every collection, and if liberally treated will furnish a fine show of bloom for every month in the year. Indeed where *Odontoglossum Alexandræ* is grown in quantity, it alone may be had in flower all the year round, or with but little intermission. All who contemplate commencing Orchid growing should begin with the free-growing profuse-blooming species, and if these succeed and give satisfaction, which they assuredly will do if rationally treated, the newer and rarer kinds may be added as opportunities present themselves. The first commencement of nearly every Orchid collection is but a series of trials and experiments, and it is always best to experimentalise with the commoner plants rather than with the rarer, and consequently more valuable species. Many amateurs have a fancy for purchasing newly imported plants, and this can be done most weeks at the auction rooms. It is as well, however, to inform them that they will have to compete with the various nurserymen or their Orchid growers, men who have in the majority of cases an extensive knowledge and well matured experience of the plants they wish to buy.

There are always many additional attractions about imported and unbloomed plants, and a keen pleasure in watching their buds slowly expand, perhaps for the first time in Europe. Added to this there is always a possibility of obtaining some new or rare species or varieties amongst them. For example, C. Stead, Esq., of Baildon, and T. A. Tingley, Esq., of Gledhow, Leeds, both fortunately obtained the chaste *Lycaste alba* amongst imported lots of *L. Skinneri*. The delicate little *Cypripedium niveum* was bought as *C. concolor*, and the lovely *Phalenopsis Luddemanni* was sold for *P. (equestris) rosea*. The golden *Oncidium Marshallianum* was supposed to be the old and well-known *O. crispum*, until it flowered. Still it is "not all gold that glitters," and in trusting to habit and external characteristics one may be grievously disappointed, as when the dusky *Oncidium pubes* is obtained in mistake for the glorious *Oncidium (sarcodes) amictum*. The grandest of all *Oncids*, *O. macranthum*, closely resembles in external appearance several other species much inferior to it in beauty. Col-

lectors would not be agreeably surprised were they to obtain plants of the dingy-flowered *Oncidium macropus* instead of *O. macranthum*; in habit the two species are identical. The same remark applies with nearly equal force to Reichenbach's striped *Oncid* (*O. zebrinum*). *Dendrobies* vary greatly in habit, according to the conditions under which they are grown. In the collection of Messrs. J. Brooke & Co., at Fairfield, a plant of *D. Farmerii* had elongated bulbs, exactly like *D. deusiflorum*, being from 12 to 15 inches long, and still, when received by them, it had the short, thick, quadrangular bulb, commonly met with in this species. *Dendrobium bigibbum* is a very rare and valuable kind, but the would-be possessors of this plant must not confound this and the dingy green and purple-flowered *D. brisbanensis*, a worthless species that resembles it very closely in habit.

Oncidium splendidum resembles the poor *O. microchilum*, and there are many other Orchids which closely resemble each other in habit, so much so that even experienced cultivators find a difficulty in distinguishing them even when in a healthy condition, much less when shrivelled after importation. *Schomburgkia crispa* and *Lælia superbiens* are nearly identical in habit, while *Odontoglossum cordatum* and *O. maculatum* closely resemble each other in their foliage and pseudo bulbs. *Cypripedium caudatum* and *Uropedium Lindeni* are identical in habit, and but little difference exists between *Cattleya Skinneri* and the orange-flowered *Epidendrum aurantiacum*. Some forms of *Dendrobium Pierardi* very nearly resemble plants of the elegant *D. Devonianum*, more especially when denuded of their foliage, as is generally the case after importation. The pseudo bulbs of *Odontoglossum Pescatorei* somewhat resemble those of *O. triumphans*, but in this case but little disappointment will follow if a mistake is made, since both are beautiful. *Cattleya labiata* and *C. Warneri* are much the same in habit, as, indeed, are all the numerous forms of this beautiful group.

After a little study and close habits of observation, the distinctive appearances of Orchids will be fixed in the eye and mind, although even the most experienced are occasionally deceived in their external characteristics, which, as a matter of course, are liable to much variation according to the different local surroundings to which they have been exposed in their native habitats. There is always a possibility, as before stated, of obtaining new or rare varieties, and the chances are much more in favour of this occurring when, as is frequently the case, the collector does not see all the plants in bloom. Of course when they are collected by resident botanists, they are in most cases found to be correctly named on their arrival in this country, and are then sold as named plants. Imported plants are sold by most of the principal Orchid growing nurserymen at rates considerably lower than those demanded for established plants. More pleasure will be derived from growing the cooler Orchids, in proportion to the capital expended, than can possibly be obtained by cultivating the far more expensive species from the tropical lowlands. Many of the finer species may now be obtained at prices scarcely above those of the better class stove and greenhouse plants, while their cultivation does not cost more than that of ordinary greenhouse plants. We find that gentlemen become so annoyed at seeing their plants in bad condition that they refuse to purchase new or rare kinds, and in many cases give up Orchid growing altogether, simply because they have been unfortunate in the choice of men to grow them. Only give Orchids rational treatment, with plenty of moisture both at the roots and in the atmosphere, and you will not have to complain of their being difficult to manage. Orchids are the most difficult plants to kill, judging from the diverse systems of treatment to which they are subjected; yet for perfect success they must, from their first introduction, be subjected to a course of good culture, and then, instead of flaccid foliage and shrivelled pseudo-bulbs, we shall have sturdy health, followed by an abundant crop of large and finely-formed flowers. It is impossible to kill Orchids by having too much moisture in the atmosphere, though many hundreds are annually killed by keeping the atmosphere in which they are grown too dry. Never try experiments with valuable Orchids; follow the accepted treatment with these, and experiment—if experiment you must—with common and cheap kinds. F. W. BURRIDGE.

CARLUDOVICAS.

THESE belong to the Screw-pine family, and are natives of tropical South America. Some of them have long climbing stems, sending out aerial roots, which fasten upon the trunks of trees, or hang down like ropes, whilst others are stemless, and form dense thickets. *C. palmata*, the species here represented, is common in shady places all over Panama, and along the coast of New Grenada and Ecuador. Its leaves, as will be seen, are shaped and plaited like a fan, and are borne on long slender stalks. They are of tolerably large size, and deeply cut into four or five divisions, each of which is again cut. The Panama hats, commonly worn in America, are made of the leaves of this *Carludovica*. All the species of this genus are fond of heat and moisture, and are useful plants in stoves, in which they will succeed in out-of-the-way corners, where other plants would perish. *C. palmata*, it may be remarked, is useful either as a table ornament or as a general decorative plant. *C. plicata*, another good species of this genus, is a climber with foliage similar to that of *palmata*, but with much shorter leafstalks; it will cling by its aerial roots to either walls or



Carludovica palmata.

pillars. *C. rotundifolia* and *Sartorii* are also elegant plants, especially the former; indeed, out of the whole eight or nine species introduced, these are the best for decorative purposes.

J. CROUCHER.

NARCISSI, TULIPS, AND OTHER BULBS FOR POT CULTURE.

BESIDES Hyacinths, some varieties of Polyanthus Narcissus, early single and double Tulips, Crocuses, Scillas &c., should be grown in pots for early spring blooming. The Polyanthus Narcissus is invaluable for the decoration of the conservatory or greenhouse, on account of the profuse way in which it blooms and its exquisite fragrance. Few bulbs, too, are so capable of taking care of themselves and so persistent in flourishing under adverse conditions as the Polyanthus Narcissus. Two bulbs of one variety should be placed in a 32-sized pot, and three in a larger one. They require to be in couples or threes to show themselves off to advantage, and the better they are grown the larger will be the trusses of flowers. A soil similar to that recommended for Hyacinths suits them well, and they succeed under the same treatment. Such

varieties as *Bazelman major* and *Gloriosus*, *Grand Monarque*, *Sir Isaac Newton*, and *Soleil d'Or* cannot fail to give satisfaction.

There are many varieties of early single, and double Tulips that are well worth cultivating in pots. A few varieties and successional plantings, if there be convenience for forcing, will give a supply of flowers from Christmas till May. A rich free sandy soil should be used for Tulips, and pots about 6 inches in diameter, capable of holding three bulbs, which should always be of one variety, should be selected for them. Some bulbs of the early single *Van Thol* should be put into pots in September; or, better still, placed in a box so that the most forward can be potted up three or four in a pot and pushed on into flower in heat; these will furnish blooms by Christmas, and subsequent plantings of scarlet *Van Thol*, *Couleur Ponceau*, white *Pottebakker*, and *Gold Prince*, among the single varieties, and *Tournesol* among the double ones, will yield a succession of flowers. When grown in a greenhouse, Tulips should be placed on the coolest shadiest side, to preserve them in bloom as long as possible, and if a piece of silk thread were placed around the flowers when fully developed, the bloom would be materially prolonged. Tulips can be grown in sitting-room windows with the greatest ease. They should have plenty of light and air, be kept freely watered when required, and be shaded from the sun. In addition to the varieties just named, the following single flowers, which are very pretty, may be used, viz.:—*Couleur Cardinal*, *Vermillion Brilliant*, *Purple Crown*, *Van der Neer*, *Proserpine*, *Thomas Moore*, *Duchesse de Parma*, *Keizer Kroon*, *Rose Grisdelin*, *Rosa Mundi*, *Bride of Haarlem*, *Van Vondel*, *Monument*, and *Marquise de Wessenrode*. The second, fourth, fifth, seventh, eighth, and twelfth of the foregoing list are of large size, fine quality, and great beauty. The double varieties that are most valuable for the purpose are *Imperator Rubrorum*, *Rex Rubrorum*, *La Candeur*, *Yellow Tournesol*, *Duke of York*, *Gloria Solis*, and *La Belle Alliance*. Polyanthus Narcissus should be buried about three-fourths beneath the soil, and Tulips just beneath it, or with the points only protruding through it.

Crocuses should not be forgotten; six or eight bulbs of them, according to size, should be placed in a 6-inch pot. In order to secure dense masses of bloom and uniformity of appearance, the bulbs should be all of one variety. The following are well adapted for cultivation in pots, viz.:—*Large Yellow*, *Albion*, and *Sir Walter Scott* (striped varieties), *Prince Albert*, *David Rizzio*, *Othello*, *Lilac superbus*, and *Ne plus ultra* (purple), *Princess Alexandra*, *Mont Blanc*, and *Mrs. Beecher Stowe* (white). For early blooming, *C. biflorus* (Scotch Crocus), *C. Susianus* (cloth of gold), and *C. versicolor* (cloth of silver), should be used. There is nothing like pot culture for bringing out the superb beauty of the Crocus; and I know of nothing more interesting than to obtain a collection of Crocuses such as are annually imported from Holland, say in twenty-five varieties, and to grow them in pots.

A few other bulbs are also suitable for pot-culture, and foremost amongst these, must be placed the chaste and fragrant early white Roman Hyacinth, a very precocious single variety imported from France. It is this Hyacinth the flowers of which can be seen in Covent Garden as early in the autumn as October and November. Singularly enough this variety, if grown in England for two years in succession, loses its early blooming qualities, which make it such a special favourite. The bulbs being small, at least three should be placed in a 32-sized pot, as soon as they can be obtained, and pushed on into bloom as rapidly as possible. A pot or two of the early-flowering *Bulbocodium vernum* should be included, for the sake of its unpretentious yet cheerful pink and white blossoms, and *Scillas bifolia* and *sibirica*, both blue flowered gems in their way, must not be overlooked. Six bulbs each of the *Bulbocodium* and *Scillas* should be placed in every pot. The pretty yellow *Narcissus pumilus*, together with its equally pretty companion, *Narcissus Bulbocodium*, known also as the *Hoop Petticoat Narciss*, and the chaste *Triteleia uniflora*, which blooms most profusely in pots, should also be included. There are bulbs belonging to other genera useful for pot culture; but those just enumerated are such as are best adapted for general cultivation in that way. R. D.

Begonia erecta multiflora.—I can say from experience that of all the Begonias this is the most suitable for house decoration. Its dark crimson foliage and abundant trusses of large pink flowers constitute it one of the most graceful and effective decorative plants with which I am acquainted. It is deliciously fragrant too, and so continuous a bloomer that it may be had in flower the whole year. Cuttings inserted in spring make nice plants for table work by the autumn; in fact, we strike cuttings of it during the whole winter. As soon as an old plant gets injured in foliage by being in the house, we cut it down and place it in the propagating house to start afresh, using the tops as cuttings. *B. Weltoniensis* also flowers the whole year round with us in heat, but its proper place is the greenhouse.—*WM. M. BAILLIE, The Gardens, Beaumont Castle.*

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Calanthe Veitchii.—For winter decoration this is one of the best plants which we possess. It produces charming spikes of Rose-coloured flowers, and forms a handsome companion to the different varieties of *Calanthe vestita*, which are also now in full beauty. *C. Veitchii* is a deciduous Orchid raised by Mr. Dohney from *Limatodes rosea* and *Calanthe vestita*. To have it in perfection, it should have a good period of rest after the flowers have faded. When cut flowers are in demand in winter, this is an invaluable Orchid.—*F.*

Bougainvillea glabra.—This plant is very valuable for cut flowers, which retain their peculiar mauve tint for many months after being cut. A specimen planted out some time ago is now flowering freely, and has furnished flowers for the last two months, and it still continues to produce flower buds, although their bracts are not so richly coloured as they were some weeks ago. To colour well it must be trained as near to the glass as possible. The specimen alluded to is planted out in the inside border of an ordinary plant stove.—*F.*

Roses in Pots.—Our nurserymen are now busily engaged in executing orders for Roses. I am about to have a quantity potted in good fibrous loam and a little rotten dung. These will be previously pruned, leaving only two or three of the strongest or best ripened shoots, which will be cut back and gently twisted round the pot tops, so as to induce them to break at four or five joints instead of one or two. These are for cut flowers in spring, and come in very handy, as forced Rosebuds are much liked, both by ladies and also by gentlemen, for button-hole bouquets.—*F. W. B.*

Eucharis amazonica.—This is one of the most valuable of winter flowering plants, not that it usually flowers during the dull season of the year, but it is one of those accommodating plants that may be forced into flower at any time by the use of bottom heat and a little judgment. Some ten or twelve plants potted and placed in a tan bed, a month ago, are now throwing up flower-spikes. Their great waxy blooms are well high invaluable for bouquets, floral decorations, or for ladies' hair. For the last-mentioned purpose they stand unrivalled, *Phalenopsis* blooms not even excepted.—*B.*

Arthropodium paniculatum.—This fine Australian Liliaceous plant is worthy of more general cultivation than it receives, on account of its panicles of pure white flowers, and the graceful effect produced by its flag-like foliage, which recurves so as to hide the pot in which the plant is grown. As a winter bracket plant it is very valuable. *A. cirrhatum* is equally elegant; both are easily grown, and may be increased by divisions of the tuberous roots. They flower in December, but can be got earlier or later as desired. The best soil for them is strong loam and leaf-mould.—*J. C.*

Dianellas.—*D. cœrulea* and *longifolia* are New Holland, reed-like plants of easy culture, which grow from 2 to 4 feet high, and which bear deep blue flowers in graceful panicles. When the beauty of the flowers is over, the seed or berries look like a large bunch of blue Currants, and are very effective, lasting often two months at a time in perfection; plants of the species just named will stand any amount of knocking about, and will succeed in any damp corner, where other plants won't grow. In the south of England they might be used as hardy sub-aquatics, and they have a pretty effect in cool conservatories.—*J. CROCHER.*

THE GARDENS OF ENGLAND.

CHILLINGHAM CASTLE.

THIS, the residence of the Earl of Tankerville, is situated in the northern division of the county of Northumberland. The castle stands upon rising ground, backed up by park scenery, almost unequalled in variety of surface and natural productions. The principal approach is through a fine avenue of Lime trees about half a mile in length, terminating in a splendid vista of rock and tree scenery in the distance. The castle stands in a sort of recess, and is entered by a magnificent flight of stone stairs. A battlemented wall that runs parallel with the drive for some distance joins the north-east angle of the castle, and hides the entrance until one is close upon it. This wall, which has the appearance of being part of the ancient building, is the boundary wall of the flower garden on that side; it is very ancient, having been built as a sort of buttress against the hill-side, to allow the ground within to be levelled for a considerable space backward; the side looking on to the drive has been faced with modern masonry, and furnished with a battlemented coping, which gives it the appearance of being a portion of the castle. The site of the flower garden within this wall must be regarded as a sort of link between the past and present, forming, as it does, the identical spot occupied by the old herb and fruit

garden, from which the castle has been supplied for hundreds of years.

“ And where the Marjoram once, and Sage and Rue,
And Balm and Mint with curl'd-leaf Parsley grew,
And double Marigolds and Silver Thyme,
And Pumpkins 'neath the window used to climb.
As Lady's Laces, everlasting Peas,
True-Love-lies-bleeding with the Hearts-of-ease
And Golden-Rods and Tansy running high,
That seemed to smile on passers-by;
Flowers in my time that every one would praise,
Tho' thrown like weeds from gardens now-a-days.”

Mr. Bowie, who has had the management of the gardens here for these last thirty years, gives an interesting account of the productions and arrangement of the old garden as it existed during his apprenticeship at Chillingham. It was broken up by Mr. Richardson, gardener to the late Countess of Tankerville, at Walton-on-Thames, and was laid out by him nearly fifty years ago as a flower garden. When one looks upon this spot it is impossible to help contrasting it with the present extensive fruit and kitchen gardens at Chillingham, and wonder how so comparatively small a space of ground, devoted to the same purpose for so many hundred years, could have supplied all that was required of it. On three sides it is closed in by old walls; but be it remembered not ordinary walls. Oh, no; they are old walls, covered with Lichens, Lycopods, and other hardy Ferns; festooned in summer with lovely creepers; one *Wistaria*, I noticed, ran along the coping for more than 130 feet. This wall encloses the garden on the east side and northern end, the other end being overlooked by the old castle. On the opposite side it is bounded by a pretty green terrace made recently, and which has added much to the beauty of this interesting spot. One great feature in the laying out of this garden is the *variety* introduced into so small a space; instead of one uniform level one finds charming alcoves carpeted with the greenest turf and hidden by tall Roses and other flowering plants. It might, indeed, with propriety be termed a “Gothic Garden.”

The kitchen garden and forcing houses are situated on ground outside the park enclosure, about a quarter of a mile distant from the castle. The houses are large and roomy, and are devoted to the growth of Grapes, Peaches, and Figs. Owing to the uncertainty of the Peach crop upon the walls, a very fine Peach house was erected last year, 74 feet long and 16 feet wide, warmed and ventilated upon the most approved plan. Until the permanent trees become established, it is profitably occupied with Peaches in 12-inch pots, which have borne magnificent crops of fruit, many of them measuring from 10 to 12 inches round. The trees seemed, indeed, the very perfection of health—an average leaf which I measured was 10 inches in length; but Chillingham has long been famous in this neighbourhood for the excellence of its fruit, both under glass and in the open air. Mr. Bowie is an excellent pomologist, and his Apple trees show both care and skill in their culture; though on a subsoil ill suited to Apple culture, his trees have been loaded with beautiful fruit. Cauler is his greatest drawback; the only remedy he has found for it is to cut the tree down to a little above the graft. Several trees that had been operated upon in this way a few years ago are now models of health and fruitfulness. The Morello Cherries here are of such a size as to give many gardeners the impression that they are a different variety from that generally grown. Mr. Bowie, however, does not think them in any way different from the variety in common cultivation. Good treatment and a rich border, no doubt, explain the cause of their great size; for in many gardens it must be recollected that Morello Cherries are planted against a north wall and left to take care of themselves. Skilful management and a free use of the knife will make the Morello what we see it here, a very different sort of fruit from what we often find it.

The park contains an area of 1,500 acres, and is well stocked with red and fallow deer, besides its famous herd of wild cattle. Many of the Firs and other trees in this park are of great size and beauty, an assertion in proof of which I may state that a heronry exists within its boundary. Few parks contain so much varied beauty in so small a compass, and its situation is so favourable that it overlooks one of the most interesting and lovely landscapes in England. J. T.

THE FLOWER GARDEN.

CLEMATISES ON ROCKWORK AND ROOT-WORK.

It would seem, from the many ways in which the free-flowering summer and autumn groups of Clematis may be fitly introduced into garden scenery, that an inappropriate position could scarcely be found. At home in dressed ground, as bedding-plants, as pillar-plants, as umbrella-plants, as single specimens or in masses, they are no less at home in wilderness scenery, about ruins or rockwork, or amongst those grotesque arrangements of old tree-stumps to which the term rootery is commonly applied. In fact, the bed, the pillar, the wall, the rock, or whatever it may be, is merely the skeleton or foundation on which the glorious blossoms of the Clematis are to be displayed. Viewed in this light, the rootery is one of the most appropriate of all places in which to introduce these splendid plants, inasmuch as its picturesque irregularities—its trunks and arms—just serve as supporters of the gorgeous purple vestments of

over the masses of roots—or rocks if planted on a rockery—leaving them afterwards to fill out the picture in their own natural way. The result, unshackled by formality, will certainly not be the least pleasing of those realized in the several departments of the garden to which the Clematis may be introduced.
—*The Clematis as a Garden Flower.*

DAISIES.

THE varieties of the double Daisy are among the most useful of our early blooming plants. Some gardeners use the Daisy extensively, and with excellent effect. It blooms very early—with the Crocuses—the dense tufts of leaves becoming literally covered with flowers; and whether planted in lines or masses, the Daisy is most effective. There are various varieties, varying in hue and tint from the deepest crimson to the purest white, with intermediate shades of pink and blush. There are flowers with quilled petals, and flowers with flat petals; but it is remarkable that there are no flat-petalled flowers of a crimson hue. The deep-coloured varieties have



Clematises on root-work.

Queen Clematis, and become, so to speak, the train bearers, who spread them out in all their rich exuberance and amplitude before the gaze of her admiring and astonished devotees. The details of culture under this head are much the same as those which are required for pillar plants. A deep rich soil must be provided, and this will, in the present case, be facilitated by the inducements there may be to throw up irregular mounds, on which to arrange, picturesquely or grotesquely, as taste may direct, the stumps or stony masses which are to give name to the spot. The same necessity will exist, in both cases, for ample feeding—the annual manuring, and the summer liquid ministration. The same general rule as to close pruning must also be followed, unless indeed the rootery requires more filling up, in which case it may be desirable to leave the whole of the matured bine of the previous season until the plants are sufficiently extended to entirely cover the prescribed space with their annual growth. In regard to training, all that will usually be required will be to lead the young shoots, during their spring and early summer growth, as evenly as possible,

in every instance quilled florets. Then there is the handsome Aucuba-leaved variety, the leaves being much blotched with gold; the curious hen and chicken Daisy, the blossoms of which give forth circles of smaller flowers, like rings of mimic floral satellites; and the somewhat gigantic mottled crimson variety known as the crown Daisy, a very common, but exceedingly showy flower. Some varieties bloom earlier than the others. One of the most precocious is a mottled crimson form, by no means uncommon, and not so good in point of quality as the well-known white and crimson varieties, but yet very useful because so early. Supposing the cultivator commences with seedlings, he should select good shades of colour allied with dwarf compact habits of growth. These can be propagated indefinitely by division of the roots. The plants can be divided in April, or in the month of September, and they should be planted in a light, rich soil, on a shady border. Here they readily take root, and make quick growth. Leaf-mould should form a good proportion of the soil; the Daisy likes it well. The Aucuba-leaved variety requires a little special care in its management. Warmth and moisture appear to suit it best; in some northern localities which, though moist, are more inclement, this handsome form will not do well. A hot dry

season is often inimical to its well-being. It evidently originated as a sport from the quilled crimson double Daisy; it will sometimes sport back to its green form, and sometimes will produce white instead of crimson flowers.

Let anyone who is not already aware of the beauty of the many varieties of double Daisies make an attempt at decorating his garden with them in the winter and spring, and he will be much gratified with the results. By October his summer bedding plants will have ceased to display their charms; he should then dig them up, fork the beds over, putting into them at the same time some light soil, such as the siftings from the potting bench and some leaf-mould, and then he can plant his Daisies as he thinks best. The green-tufted plants will give the beds a fresh appearance during the winter, and by the first week in March they begin to put forth their flowers, and they light up the garden with myriads of pretty flowers. In May, when lifted to make room for the summer bedding plants, the roots can be divided and planted in nursery beds for use in the following autumn. My custom is to lift the plants with good balls, and place them in a shaded reserve garden; here they shed their seed, and by October numbers of seedling plants appear.

R. D.

Bamboos.—We have on several occasions directed attention to the value of the hardy Bamboos as decorative plants, one of their best qualities being the length of time they wear their summer's freshness after the beauty of most other plants has been destroyed. We noticed the other day in one of the London parks tufts of *Bambusa falcata* looking as fresh and vigorous as if it were the month of July, instead of end of November. We have also seen the variegated *Bambusa Fortunei*, during the past week, in first-rate condition out of doors.—T. S.

Pampas Grass.—I have sent you a gracefully drooping plume of Pampas Grass, produced by a plant obtained some six or seven years ago from Messrs. Henderson, who told me that it was a continental variety, named *Elegans*, which had not then flowered. My plant has sent up several fine spikes this season for the first time, which I have gathered for preserving; they have a beautiful effect in my library, supported by two bears which I have modelled for the purpose.—C. ISHAM, *Lampart Hall, Northampton*. [The spike sent was a beautiful drooping one, silvery-white, and quite distinct in aspect from the ordinary forms of the Pampas Grass. By the way there are various continental varieties of the Pampas Grass well worthy our attention, especially those with pinkish flowers.]

Daisies on Lawns.—What is the best way of getting rid of Daisies on lawns? I was recommended to use "Watson's Lawn Sand," and did so. Last spring it had a marvellous effect for the time, *i. e.*, all through the summer the Daisies disappeared, but they have come thicker than ever since.—C. W. [Mr. Nichol, of Drinkstone Park, Bury St. Edmunds, who has been successful in clearing lawns of weeds by means of oil of vitriol, says:—"Oil of vitriol will, if properly applied, doubtless kill Daisies on lawns quite as effectually as it does Plantains. It would, however, of course be a more tedious job, particularly if the Daisies were large and many-headed. The acid should be dropped right in the heart of each plant, and a single drop will be sufficient; if the acid is good, it will immediately burn up the crown or growing point."]

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Large Fuchsias.—Some time ago we mentioned that there was in the garden of the Knight of Kerry, in Valencia, a *Fuchsia Ricartonii*, which it was expected would exceed 120 feet in circumference this season. It has just been measured, and is 124½ feet round the extreme of the branches.

A Pink "Gloire de Dijon" Rose.—A sport from the *Gloire de Dijon* Rose has been obtained by Mr. A. S. Kemp, in which the flowers are all of a rosy-pink colour. In former years the colour has been of the usual tint. The plant was struck four years ago, and is growing on its own roots in ordinary garden soil. This is, no doubt, a case of reversion, and if it can be perpetuated the sport will be highly prized.—*Florist*.

Long Rest of Bulbs.—At Redleaf the Guernsey Lily (*Nerine sarniensis*) has thrown up a flower spike, after resting for five years; the plant is in a warm border in front of the conservatory. Some few years back there came up in the same border a flower-stem of a bulb which must have been planted ten years before, and it proved to be the lovely *Calochortus venustus*, but it has never appeared since. In the same border *Moran* or *Vicusseuxia pavonia* has flowered annually for these last twenty-six years.

Campanula carpatica.—This has proved a gem here as a bedding plant for these two seasons. Its flowers are beautifully blue, it grows about 8 inches in height, and comes into bloom in June, and lasts in beauty far into October. After that I remove it to the reserve garden, and replant it in the end of April or early in May. It will grow in a dry sandy soil; but a light loam suits it best. It is perfectly hardy, and ought to be more largely used out of doors than tis.—F. BARNES, *The Croft, Walton-on-Thames*.

THE ARBORETUM.

BUD VARIATION AS REGARDS HOLLIES.

NUMEROUS examples of variation in fruits, flowers, and foliage come under the notice of gardeners and others at different times, but such observers are rarely able to do more than "take note of such singular occurrences." In the case of hybrid variegated Geraniums, we are, however, able to explain the cause and tendency so frequently observed in them to return to their normal state. I have found this tendency very strong in the *Cloth of Gold* when planted out in rich soil; perhaps no variety has what I would call vital force so weak in it as this; when planted out in cold and uncongenial soil it will linger on between life and death for weeks; its roots are so few, even in its most healthy condition, that the wonder is how they sustain the plants to which they are attached. The case is quite different when it throws up a green shoot from the root, as it often does with me. Then both root and branch seem to be possessed of a force and vitality quite different from those of the hybrid. On the other hand, we frequently see shoots of pure white or cream colour spring up from the root or side branches of variegated Geraniums. Have any of your readers ever been able to strike and retain such shoots as plants? I have known many attempts made to retain them, but I am unacquainted with any one who has been entirely successful with them. If I am correct in my inference, to what source are we to look for an explanation, in order to account for the want of vitality in shoots of this description when detached from the parent plant? To gardeners like myself, little versed in vegetable physiology, phenomena such as have just been noticed connected with plant life are highly interesting. The most remarkable case connected with bud variation that has come under my notice lately, occurs on the large Holly trees noticed by me in THE GARDEN of the 10th of February last (page 266). At a height of about 20 feet from the ground a branch pushed out from the main stem of a variegated Holly, bearing green leaves upon all the lateral twigs that radiated from it for some distance. This shoot then breaks into variegation towards the extremity, but not after the form of that of the parent; the variegation is, in short, inverted: the edge of the leaf is green and the centre is streaked or blotched with gold, as will be seen by the specimens sent. Shoots wholly golden are very numerous, but the leaves generally, to a certain extent, drop off them during winter. I have not yet grafted any of these variegations, but I intend next season to test their permanency when detached from the parent tree. The four specimens sent are taken from the same tree, and two of them from the same branch. J. T.

[What we have received is a branch representing the original variegation, which consists in the green leaves being beautifully laced with gold; then we have the green shoot above alluded to, charmingly ornamented with coral-coloured berries; and, lastly, illustrations of the variegation into which it has broken towards the extremity; in this the leaves are streaked and splashed in the centre with yellow, and edged with ordinary green colour. In this alteration of the position of the variegation, the yellow is not, however, so bright or striking as that with which the leaves of the tree producing it is laced. Our correspondent has also sent us a shoot from the same tree with leaves wholly yellow.]

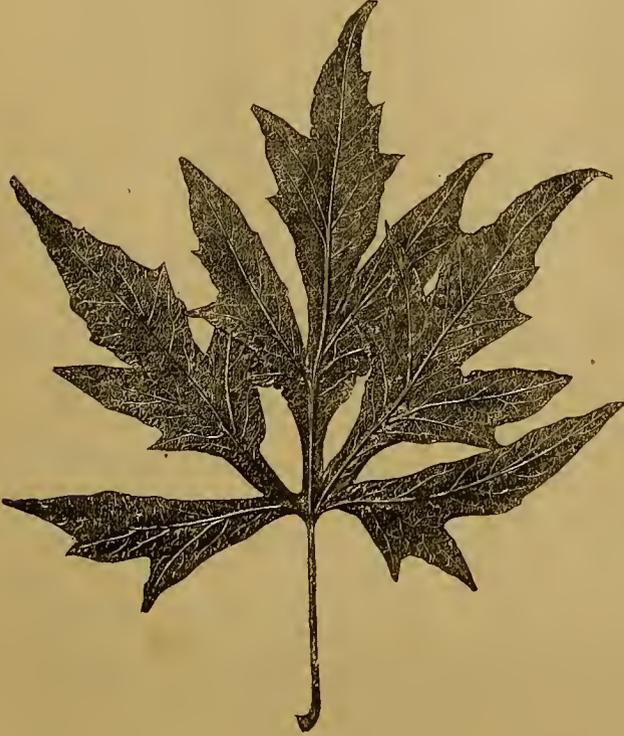
Importance of Forests.—At the nineteenth annual meeting of the Scottish Arboricultural Society, held the other day, the President, in his inaugural address, alluded to the beneficial effects of the maintenance of a due proportion of forest land in every country, from the shelter it gives in spring and protection from high winds, as well as to the common belief that malaria and flights of locusts and noxious insects, &c., are often arrested by belts of forest. He then proceeded to sketch the evils that have followed the reckless cutting down of indigenous wood in many countries, where, only when it was too late, have measures been adopted for preserving the forests. He urged the necessity of prudence and caution in all operations which, on a large scale, interfere with the primeval arrangements of the organic and inorganic world.

HARDY TREES AND SHRUBS.

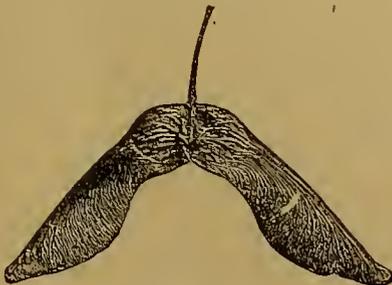
BY GEORGE GORDON, A.L.S.

THE CUT-LEAVED NORWAY MAPLE (*ACER PLATANOIDES DISSECTUM*).

THIS is a fine variety of the Norway Maple, and forms a middle sized tree, from 30 to 40 feet high, with an ample head. It was first introduced from Belgium in 1845, by the late Mr. Jos. Knight, of the Exotic Nursery, Chelsea. The leaves are flat, dark glossy green, and, with the exception of a little tomentum in the axils of the principal veins on the under

Leaf of *Acer platanoides dissectum*.

side, quite smooth on both surfaces, they are divided down to the footstalks into five acute, wedge-shaped, open lobes, the three outer of which are again three-lobed, and all furnished on the edges with long, pointed, incised serratures of different sizes. The keys or fruit are large, quite smooth, and of a bright glossy green, with thin carpels, and long, pointed, wide-spreading wings. It deserves a place in every collection, on

Fruit or Key of *Acer platanoides dissectum*.

account of the elegant form of its leaves. The length of a full-sized leaf is $8\frac{1}{2}$ inches, including the footstalks, which is from $3\frac{1}{2}$ to 4 inches long, and the breadth of the leaf is $7\frac{1}{2}$ inches.

THE EAGLE'S CLAW MAPLE (*ACER PLATANOIDES LACINIATUM*).

This is another singular variety of the Norway Maple, the origin of which is yet unknown. It forms a less stately tree than the species, and seldom exceeds 25 feet in height, with

the principal branches more numerous, and somewhat ascending, and the branchlets slender, twiggy, and somewhat declining, or bent downwards. The leaves, which are not more than half the size of those of the species, are palmately wedge-shaped, with the lobes acutely, deeply, and irregularly cut, or variously incised, and so recurved and rolled up at the points as to give the leaf the form of a bird's foot half open. It is sometimes named the Hawksfoot Maple (*Acer crispum*).

Big Trees.—Our American cousins, it appears, can no longer boast of the largest trees in the world. The giant Wellingtonias of the groves of Mariposa are eclipsed by the enormous gum trees (*Eucalypti*) lately discovered in Victoria and Western Australia. Several of these have been measured, and found to exceed 450 feet in height, and to be over 40 feet in circumference. It seems, therefore, that the boast of having the loftiest trees in the world now belongs to Australia.

Why Lightning Strikes Trees.—It is probably impracticable to prevent cattle herding together under trees, and thereby in several ways becoming especially liable to injury by lightning. For instance, the ordinary attractive power of the tree is materially increased by the fact that a column of heated air and vapour arises from them, envelopes the trees, and passes upwards. As this vapour is a better conductor than the surrounding air, it tends to draw the lightning to the particular tree under which they are congregated. A singular illustration of the same results when a large number of human beings are collected into a small space was afforded by an accident in America, where, out of several tents, the lowest was struck, it being the only one crammed full of people. Even a single human being walking along a turnpike road, unless there be trees on both sides, is liable to be struck, being the most prominent object, and of course an umbrella, as ordinarily constructed, adds to the danger. It is much safer to close the umbrella and get wet.—*Cassell's Magazine*.

Errors in Grouping.—At least one person in three of those who plant trees in groups or belts for ornamental purposes commits errors in consequence of not taking "one long look ahead." Probably in many instances mistakes are made in consequence of the ignorance of the parties directing the planting of the trees, as they judge of the future size from the specimens in hand, the largest being selected for centres of groups or backgrounds of belts. A few years, however, are only required to develop and show errors, and the tall, slim *Arbor-vitæ* or Irish Juniper of to-day is soon overtopped by the stocky Norway or Hemlock Spruce. Planting ornamental trees is a work requiring some forethought, as it is not altogether for the present immediate effect that it is done, but for time far distant, and one needs to have the future form, size, and general appearance of the trees in his mind's eye at the beginning, if he would avoid making blunders that never can be corrected. It requires a practical and intimate acquaintance with all the trees used in forming groups, not only as they appear in their native forests, but when cultivated, for some show the effects of culture differently from others.—F. W.

NOTES AND QUESTIONS ON TREES AND SHRUBS.

Misuse of Variegated Trees, etc.—Let me protest against the bad use frequently made of striking variegated trees and shrubs. Their good or bad effect greatly depends on their marked contrast with the ordinary green types of foliage, and therefore to plant them in lines or crowds is to destroy their beauty; yet I have lately seen a ribbon border with the new variegated *Negundo* in a line at the back, and a noble place in the Midlands hideous from the presence of several thousand golden Yews in lines, avenues, &c., as if there was little else in the world worth planting.—R.

Young's Weeping Birch.—Planters fond of weeping trees would do well to bear in mind that this is a very distinct and valuable variety. The ordinary Weeping Birch grows an erect tree, however gracefully its branchlets may wave; but in this form the character is like that of the Weeping Beech or the Weeping Mountain Elm. There is an abundant stock of the tree in Mr. Young's nurseries, Milford, near Godalming, many of the specimens well showing the habit of the tree. As in the case of the Weeping Elm and Weeping Beech, its full beauty will only be seen when it attains to a considerable age.

A Variegated Arancaria.—A novelty at Castle Kennedy is the golden *Arancaria imbricata*. This is a fine variegation, with, however, a strong tendency to reversion. It has one very singular peculiarity: the more it is cut, the more decidedly it is variegated. The variegation also breaks out most capriciously; a green branch will have one golden bud upon it, and if cut back to that, the bud will break out into almost a pure golden branch. This, however, will again push green shoots. It is a most interesting and beautiful tree, but inconstant. There seems to be a constant struggle between the green and golden colours, and in most of the progeny, as indeed in the parent plant, the green decidedly has it. The variegation does not seem in any way to have affected the strength or health of the tree, which grows as freely as others.—F.

THE FRUIT GARDEN.

THE AUTHOR OF UNCLE TOM'S CABIN AN ORANGE GROWER.

MRS. H. BEECHER STOWE, in the *Christian Union*, gives some figures respecting the cultivation of Oranges in Florida by herself, concerning which some apocryphal statements have been made. Her orchard, or "grove," consists of 115 trees, occupying an acre and a half of ground, and the average crop matured during five years was 60,000. This would be an average per tree of 521. How many Oranges make a bushel is not stated, but judging by large Peaches and Pears; the number would probably average from eighty to one hundred. Taking the former figure as an average, Mrs. Stowe's crop of 60,000 would make about 750 bushels, or about six and a half bushels per tree. The proceeds of these crops are not given, but at one cent each the return would be 600 dollars for the orchard, which is not a remarkable return in fruit growing even for colder climates than Florida. Two of these five crops were lost through autumn frosts, but these were the only instances of total or partial losses from frosts since 1835, when an extraordinary "freeze" destroyed the trees down to the ground. They afterwards recovered, and made stately trees. The Orange tree had an insect enemy some fifteen or twenty years ago, a sort of scale which operated much as the canker worm does on Apple trees, but it has disappeared. The tree is of wonderful vitality, its roots being immense in number, filling nearly the entire soil about them, and generally pushing out the weaker sorts of vegetation. Manure intended for flower beds among them is greedily appropriated, and flowers in consequence stand a poor chance in such an orchard; still it would not seem as if flowers were very essential in such an orchard, as the trees themselves, when in bloom, "are a bouquet of sweets," and budding week "a week of pearls." The sight is gorgeous, and the fragrance "a sort of dreamy intoxication." Propagation is from the seed; "like produces like"—no budding for varieties is necessary. With high cultivation fruit is borne in six years after planting the seed; at seven, 300 Oranges per tree have been produced.

Fig Trees.—I removed a Fig tree last April from the back wall of a vinery to another house. It has made no young wood this season, only a little foliage on the top of each branch. Towards August it showed a great quantity of fruit, which it now retains, some being about the size of small Peas; others 3 inches in circumference. Will these fruits ripen next season? The tree is naked in the centre and lower parts. I intend to "head-in" part of the branches this season, and part next, in such a way that I shall not miss a crop. When and how am I to proceed? If, however, the fruit just mentioned ripens, I would rather be inclined not to prune hard this time.—M. R., *Ireland*. [The Fig tree lifted from one vinery into another doubtless has been making new roots all the summer, and the consequence has been but little top growth. If the soil and situation are favourable, you will have plenty of shoots and foliage next year, and the young fruit formed on the summits of this year's shoots will ripen, if not injured by severe winter frosts. The tree ought not to be pruned much, only a few of the bare branches should be taken out where no growths have been formed with fruit on them. During the growing time in summer, if some weak manure-water is given after the first crop has ripened, a second crop will come in, and will be finer than the first.—W. T.]

Pruning Dwarf Trees.—When trees on dwarf stocks are trained as bushes or standards they should be allowed to extend themselves on all sides as much as they will; this is the way to get quick returns and the full benefit of the stock. Cutting back the shoots, or even pinching them excessively during summer, is injurious so far as fruit prospects are concerned, for the more wood the more bearing surface there will be. If they are allowed to expend their energies freely, the shoots will neither be too gross nor too crowded, while a string of fruit buds will be developed along every shoot. The natural habit of the Apple and Pear tree is to extend their branches chiefly at the extremities and furnish fruit buds along the stem—in fact, like a cordon. It is therefore evident that cutting the branches back in pruning is an irrational proceeding. The small cordon, as I understand it, is perhaps the only restricted and artificial form of training that is founded upon a correct notion of the habit of the Apple when allowed to grow naturally. A single cordon, allowed to extend longitudinally as much as it will, will show very little disposition to make lateral branches, but it will make fruit buds in abundance, and the largest orchard tree manifests exactly the same habit if left to take care of itself, and yet it seems we are only learning these lessons from nature in regard to fruit culture generally, for hitherto cutting and heaving have been the rule. For many years

both the winter hacking and summer pinching have been much too severe, and the common practice of pinching dwarf trees to three leaves is a mischievous blunder. To six leaves is the shortest to which shoots should be pinched.—J. S.

Keeping Grapes in Water.—I had ripe this year, in the month of April, a quantity of Grapes, which had been forced in pots. The kind was Frankenthal, the best of all the varieties of Hamburg. My pot Vines for next year sadly wanted more light. I therefore resolved to cut the crops, and place the bunches in bottles filled with water containing a few pieces of charcoal. That very day it was done, and all were safely placed in the fruit room, the bottles being placed in a slanting position, with the neck of the bottle and the bunch hanging over the edge of the shelves. There they kept good till all were used, and the young Vines, which I expect to do duty next year, were transferred to their places in the house, there to grow and ripen their wood, which they could not have done so well in the Vinery in which they were growing. But the curious part remains to be told. More than half the Vines put forth roots in the water, and some of them are now 2 feet long, while the fresh shoots made are from 6 inches to a foot in length. Of course, they are of no use, but I mention this fact, as I do not remember to have heard of a similar case. I may mention that Grapes, after being cut, keep best in a somewhat dark place. In a strong light evaporation goes on both from bunch and water, which is not so well.—J. RUST, *Eridge Castle, Tunbridge Wells*.

CYPRESS GROVES OF THE SOUTHERN STATES OF AMERICA.

AMONG the varied features of the noble forests of America, none are more striking or pleasing than the grand groups of deciduous Cypress, so frequently met with in the Southern States. Unlike the more hardy Conifers which live on the dry, barren uplands, and which form the immense "Pine Barrens" of Georgia, Florida, and other Southern States, the Taxodium revels in rich alluvial bottoms, on river bays, and bayou slopes, or in the neighbourhood of the still lagoon, where the soil is rich and deep, and where, during the summer months, it finds plenty of humidity to quench its thirst. Like some other American trees in the Southern States, the Taxodium selects its places of growth with epicurean nicety, as regards soil and position, and is thus enabled to rear its graceful form high above its congeners of the forest, with which its delicate pea-green foliage forms a delightful contrast. At no period of the year do these Cypresses appear to such good advantage as when the forests put on their autumn tints of red and gold. Then these Cypresses have assumed their deepest emerald hue, and stand out in bold relief. Nothing can possibly exceed the beauty of an American forest in the autumn. Maples sprinkle the woods with rich crimson; the Beech puts on its golden tints, which vary from pale yellow to the brightest golden colour; the Dogwood furnishes purple, and the Chestnut and other trees throw over the whole a veil of delicate brown, whilst Water Oaks of exquisite symmetry, the red and post Oak, and Pines, maintain their glorious green well into the winter. Groups of Cypresses, such as are shown in the accompanying illustration, are common enough in Georgia and Florida, on the banks of the Mississippi, and in the swamps of Louisiana, and among them beautiful red and blue birds find a home, as well as different varieties of the gay-coloured woodpecker, which chase one another up and down the soft bark of these Cypresses, in search of food. When these Cypresses are found in thick groves their trunks are not as a matter of course so stout as in the case of a stray example found in some genial nook by itself. There this Taxodium is seen in all its stalwart vigour and symmetry of form. Trees of it thus situated often measure 12 feet in circumference at the base, and tower up over 100 feet in height. As regards its timber it is valued for piles, and for other purposes where it has to remain under water. In our own weeping climate Taxodiums should have a deep porous soil, but not, as is too often the case, a low, damp one. In America it has an almost tropical sun to contend against, and therefore its roots have to drink up more moisture than they are called upon to do in this country. It is scarcely necessary to remind the reader of the value of this noble tree in our parks and pleasure grounds. It is perfectly hardy, and the specimens at Syon are finer than one often sees in its native country, no doubt in consequence of the trees being crowded there. PETER WALLACE.



A GROVE OF DECIDUOUS CYPRESSES.

THE GARDEN IN THE HOUSE.

CULTURE OF PLANTS IN ROOMS.

(Continued from p. 430.)

THE FORCING OF FLOWERING SHRUBS.

For forcing, well-rooted and not too large plants should be chosen and planted in a suitable soil in moderate sized pots or tubs, care being taken to preserve the ball entire. If the roots have been disturbed to any extent, either in taking them up, or in the course of transit from a distance, the plants should not be forced during the succeeding winter. When the plants have to be obtained from a distance, the nurseryman should be directed to send only healthy, not too large plants, which have been several times transplanted, and which are well furnished with roots. He should also be requested to wrap up the ball of each plant in moss and bast matting or straw, and pack them carefully in a basket or hamper. The additional cost which this may involve is not to be compared with the importance of the safe transmission of the plants. The time for potting the plants intended for forcing varies according to circumstances, from spring to the end of August and beginning of September. By far the greater number of plants, which when removed from the open ground have no ball, because they have not yet formed any quantity of roots, should be potted in spring. From the end of August to the beginning of September all plants which have formed good balls may be taken up and either laid by close at hand, or (as is practised in the Belgian nurseries) planted in baskets filled with soil and plunged in the open ground, where they will form as good balls as if they had been potted.

TREATMENT OF SHRUBS POTTED IN AUTUMN FOR FORCING.

Plants which are not taken up from the open ground for forcing until autumn should be potted in the end of August or beginning of September, great care being taken not to injure the ball. This early potting, at a time when the plants still have leaves, has a twofold object, namely the better production of roots before the commencement of the forcing and the excitement to a state of rest at an earlier period. Immediately after potting, the plants should be placed in a shady place, and copiously watered once. When they have somewhat recovered themselves they should be removed to a sunny position in the open air, and, if deciduous plants, they should from this time forward be only sparingly watered, gradually lessening the supply until it ceases altogether at the beginning of October. Should the position not be sheltered from rain, it may be prevented from entering the ball by laying the pots on their sides. Not until after the frost has commenced, and the temperature has fallen to from 28° to 24° Fahr., should the plants be removed into a cellar, protected from the frost and not too damp, or into another part of the house where the temperature does not fall below freezing point, and is generally not above 36° Fahr. Here they are to remain until they are wanted for forcing. They should only be watered when it is to be apprehended that, by standing in a dry room, the now leafless plants may be injured by the too great dryness of the ball. This only applies to deciduous shrubs. Evergreen plants should be watered as often as they become dry, even during the period of rest. Of the shrubs which we recommend for forcing, the deciduous Azaleas, Daphne Mezereon and Syringas, and amongst the evergreens the Rhododendrons are the only ones which can be potted in autumn, in order to produce a full bloom in winter.

SUMMER TREATMENT OF SHRUBS INTENDED FOR FORCING.

It is best to employ for forcing only such plants as have either been taken from the nursery in spring and then potted, or such as, having been found too weak for forcing in the previous winter, have been kept in pots during that season. Especial attention must be devoted to both throughout the summer. First, when they are transplanted, they should be placed in suitable soil, which we shall particularize in the enumeration of shrubs adapted for forcing. In the next place, those plants which remain in pots from the previous year should be transferred into somewhat larger ones before the new growth has commenced. After this is done, all the plants should be placed in a sheltered sunny position in the

open air on a stand, where they may commence to vegetate as soon as possible. All superfluous small side shoots should be cut away. This will strengthen the growth during the summer. However, side-shoots which bear flower-buds (as in the various species of Pyrus) should not be removed. The plants should also be watered the whole summer through, and with the exception of Azaleas, Daphnes, and Rhododendrons, should, during the period of growth, receive once every week a watering with liquid manure. When the plants are placed in the full sunshine, the pots should be protected from too great heat by placing boards in front of them. In the early spring, as long as cold nights are to be feared, the plants should be watered only in the morning, but in the summer months the evening is the proper time. From the middle of August the supply of water should be gradually diminished, so that, in the case of deciduous plants, the period of rest may commence by the middle of September. Their further treatment is the same as that of those plants which have not been potted until autumn. Deutzias and Weigelas, however, should be placed in shelter before the arrival of frost.—*E. Regel.*

(To be continued.)

COLOUR IN TABLE DECORATION.

ONE of the greatest arts in decorating a dinner table consists in grouping the flowers, foliage, and fruit as naturally as possible. Placing flowers in circles and lines gives very pretty colour-effects of a geometrical character; but the results are not artistic. Such arrangements are, moreover, never found in nature, and consequently they do not satisfy. They may please for the moment, but if gazed upon for any length of time they weary the eyes, a circumstance easily accounted for. In nature's pictures there is always such a large proportion of greens and browns, that the sight is not fatigued by dwelling upon them. In nature you never find geometrical figures prominently traced in bright colours. The most brilliant floral displays are sure to be toned down by the surroundings. The result is pleasure and repose. Facts such as these are too much overlooked by table decorators; they are nevertheless not the less important to those who have to sit out an entertainment lasting a couple of hours or longer.

W. T. P.

Malva crispa leaves for garnishing.—It may not be generally known that the leaves of *Malva crispa* are useful for garnishing. In order to save Vine-leaves, the late Mr. Macintosh used to make several successive sowings of this plant at Drumlaugh, for that purpose.—*W. I. D.*

THE CLOSED GENTIAN.

I CLIMBED one day upon a great, high shelf
Where God rare things doth hide,
And found a poem that had writ itself
Against the mountain side.
A plant whose green spires something barely grew
Held at its short, brave tips
Full-clustered flowers of vivid purple-blue,
Yet bud-like, with shut lips.
The delicate corollas swelled unsheathed
From calyx-cradles small
In tender bells, with clear-curved veinings wreathed
That, closing, sealed them all.
I said, It is the Gentian; and I sought
For an unfolded one,
Just veiling with sweet fringes its heart-thought
Of gladness from the sun.
Vainly. It never opened, some one said.
The strange, fair bud was all:—
A bright hope only half interpreted,
And shrivelling to its fall.
I would not think it. Surely never so
The blessed types are set.
Still I went looking, wistful, to and fro,
The perfect word to get.
'Twas there for reading. God's rhymes take large room,
With answering meanings rife:
Not far from the "closed Gentian" shone white bloom
Of "Everlasting Life!"
—*Mrs. Whitney.*

THE advent of genius is like what florists style the breaking of a seedling Tulip into what we may call high-caste colours—ten thousand dingy flowers, then one with the divine streak; or if you prefer it, the coming-up, in old Jacob's garden, of that most gentlemanly little fruit the Seckle Pear.—*O. W. HOLMES.*

GARDEN DESIGN.

WATER IN THE SHADE.

In forming artificial lakes, or adapting natural streams to the features of park scenery, the common practice is to place the lake, large or small, in the full glare of an unshaded position; except where the nature of the ground presents insurmountable obstacles to such an arrangement. The "Round Pond" in Kensington Gardens lies in the full glare of the mid-day sun, and no shadow is cast over any portion of its surface; so does the Serpentine; so does the lake at Blenheim; and so, in fact, do most of the noble pieces of water planned by landscape gardeners of a past generation, in our public as well as in our private parks and gardens. This aspect of open, glassy sheets of water, seldom fails to produce a good effect. The silvery expanse is a great relief to the eye in the midst of a wide-spreading extent of green; but much more variety would be obtained if the outlines of such lakes were more frequently broken by bold masses of trees or abrupt and precipitous rocks (easily contrived), which might be made to rise 15 or 20 feet above the water, to which they should descend in sheer unbroken surfaces, perpendicularly to the lake, in which their reflections, seen from various points,

upon as the focus of a picture. The water spreads into a small lake towards the front of the picture, bounded on one side by perpendicular rocks which exclude the light from a great portion of it, while other parts are shaded by dense foliage, so that in this portion, the dark effect of the nearly black-looking water forms a striking contrast with that portion which receives some direct rays of light. Nothing can be more impressive in landscape scenery, either natural or artificial, than dark still water in the midst of woods. Over the surfaces of such shadowy and solitary pools, when, perhaps, the flight of a kingfisher imparts a sudden flash of dazzling colour, or when the surface is momentarily broken by the disappearance of a diving bird, a sudden though momentary change breaks upon the stillness and the solitude, and cannot fail to raise certain emotions of interest and admiration. I have in my mind's eye a line of dark water buried among the deep shadows of the woods of Fontainebleau, about which I have observed such effects; and to compare miniature beauties with sublime and extensive ones, I recollect a mass of various foliage surrounding a small clear pond on a beautiful slope in a gentleman's grounds at Hayes Common, in Kent, which also illustrates the effect I am attempting to describe. It is a pond dug in the side of a beautiful green slope, to serve as a drinking place for the cattle; but has



Water in the Shade.

would produce a striking effect, especially if Ivies and other trailing shrubs were planted on some parts of the summits, to hang down the rocky face, untrained and unshorn, in all the wild grace of nature. The groups of trees would produce somewhat analogous effects to those of the rocks, and both would cast their morning and evening shadows far across the water, and vary the tones of the surface with many fitful changes of light and shade. Such devices would serve to improve very greatly many lakes and ornamental ponds, the borders of which have been left too formal and too smooth; but the object of the present article is rather to show what cool and delightful effects may be produced by the formation of small lakes or artificial streams *entirely* in the shade of woods. In such situations water has an effect entirely different from that which it produces in the full light of an open space. The accompanying woodcut will serve to show the kind of effect suggested much better than words. Towards the back of the composition the water is designed so as to resemble a narrow but deep and quiet stream, the sparkle of which, as it reflects the rays which fall upon it between the lofty trees of the surrounding woods, lights up the surrounding shades with a delightful gleam that a painter would at once seize

been planted round with Oak, Ash, Beech, Maple, Larch, and Scotch Fir, all of which are now full-grown trees, forming a remarkably picturesque group, the effect of which is exceedingly attractive, especially at certain times of the day, when the light finds its way to the water, which sparkles in the dark shadow like a huge diamond. It is one of the prettiest features on the estate, which, from the bold undulations of the ground, has several characteristics of far more than usual attractiveness, all of which have been greatly added to by good laying out and skilful planting. There is a story current in the neighbourhood to the effect that much of the planting was done under the advice of the celebrated William Pitt, who resided at Hayes at the time the place in question was planted; and it is said that he took great pleasure in strolling up while the works were in progress, and talking with and advising the workmen as to the best modes of planting, in which art, as an amateur, he fancied himself a great proficient. The group of trees overshadowing the hill-side pond, whether planted by the advice of William Pitt or not, is a most admirably picturesque group, and is a good example of the charming effect produced by water sparkling in the shade.

H. N. H.

THE LIBRARY.

THE PLANTATION, LEIGHTON BUZZARD.

This is a pamphlet printed for private circulation by Mr. Bassett, the owner of the admirable arboretum which it describes. This was planted under Mr. Marnock's superintendence about twenty-five years ago, and managed after his direction ever since. The following extract gives a fair idea of the place:—

Sometimes, unhappily not often, man makes amends by planting trees for the many fair scenes he has obliterated with factories, foul streets, or cinder heaps. All of us see too much of this destruction. We have just visited a place where the barren waste of twenty-five years ago is now an arboricultural Arcadia, so rich is it with trees from a hundred climes. Long lines of golden light stretch between the shadows of tall Deodars, where a short generation ago bracken and briar seemed the only things congenial to the soil. In nature we find vast wastes of barren-looking land, in some countries covering areas as large or larger than the whole of ours, and at first sight many are apt to think the scant vegetation of these wastes expresses the full fertility of the soil. Not so. The fertility of soils, with few exceptions, is practically limitless, and especially of those wastes which are so often described as "barren sands." Needless to explain the causes which make them appear barren, when we have so much to say of the happy results of tickling one of them with a pick, and planting, to a small extent at first, but afterwards largely and with great spirit, every kind of coniferous tree that could be bought for money in the gardens of the United Kingdom. We have seen a good many plantations and arboretums in the country seats of England, but never one on the whole so satisfactory—looking to the perfect health of the plants and the completeness of the collection, its age, site, and soil—as this mansionless spot. The whole was planted under the superintendence of Mr. Robert Marnock, the well-known landscape gardener, and has been under his care since its origin. The Plantation, for such is the name of the place, lies about one mile north of the market town of Leighton Buzzard, about seven miles from Woburn Abbey, in Bedfordshire, and on the high road leading through Great Brick Hill to Haly Heath Road, near Fenny Stratford. The land in which the Pinetum and Plantation stands is 70 acres in extent, and was trenched 20 inches deep when first reclaimed in the autumn and winter of 1844, and afterwards thickly planted in the spring of 1845 with the ordinary kind of trees, such as Larches, Scotch Firs, Oaks, Spanish Chestnuts, Beech, Ash, Birch, &c., the lower part of the ground being planted with the broad-leaved deciduous kinds, and the higher parts with the Larches and Scotch Firs. The surface soil is very thin, and may be said to consist of vegetable matter and sand, resting upon a deep stratum or bed of green sand, or what is popularly known in the district as the Woburn or Bedford sands, which, when enriched by manure, produces such fine Carrots for the London Markets. When, however, this bed of sand is trenched up two spits deep, and exposed for some time to the influences of air, frost, and rain, it proves to be one of the most congenial substances for coniferous plants to grow in that can well be imagined, as is evident in Mr. Bassett's plantation, where there is not an unhealthy plant to be seen, and where the Vancouver's Island and Douglas Fir make shoots annually from 3 to 4 feet long. In consequence of the great success of the plantations of Coniferae here, it may be well to say a few words about the peculiar mode of treating them. The mode of planting specimen Conifers is quite novel, and as follows: when it is determined where a permanent specimen is to be placed, the ordinary trees of the plantation are cleared away, the ground is trenched 20 inches deep, and formed into an elevated circular platform 1 foot higher than the surrounding surface, with a slight rim a little elevated, to prevent the rain which falls on the surface from running off, and in diameter according to the vigour or nature of the kind to be planted. A platform 6 feet across is sufficient at first for the moderate-growing kinds; but for the more vigorous and robust-growing kinds a table of at least 10 feet is requisite, leaving the trench open round the outside to receive the fallen leaves; afterwards, as the roots are found to reach the outside, which generally takes place in from two to three years, another addition of from 3 to 4 feet is made all round.

AGE AND SIZE OF PRINCIPAL PLANTINGS.

And now for some details of the arboricultural riches of the place, accompanied with the dates of planting, &c., so that we may record how much may be done in a comparatively short time. Among the first trees that attract notice on entering are the following:—A couple of fine Cedrus Deodars, 26 feet high, planted twenty-four years; specimen of the Malaga Silver Fir (*Picea Pinsapo*), 26 feet high, planted

seventeen years; a Taurian Pine (*P. Pallasiana*), 60 feet, with long, spreading, contorted branches, and a stem 4 feet 6 inches in girth, planted twenty-three years; a fine specimen of the Black Austrian Pine (*P. austriaca*), 60 feet in height, with a stem girthing 4 feet 7 inches, planted twenty-four years (the girths given are all taken 1 foot from the ground); two Pinsapo Firs, 22 feet high and 3 feet in girth, twenty-four years planted; Low's Silver Fir (*Picea Lowiana*), about 7 feet high, four years planted.

The Deodar avenue, or grass drive, leading from near the lodge to the lawn, is 50 feet wide and bordered with noble Deodar plants on each side from 25 feet to 30 feet in height, twenty-four years planted. There are also planted about in different parts of the grounds a vast number of similar size, furnished with branches to the ground. Those planted singly on the sloping sides of the valleys and glens and open dells, are very grand and effective objects seen from the higher parts of the ground. The lawn is an open glade sloping towards the west, and some 3 or 4 acres in extent, surrounded by the original trees of the plantation, and on which several of the finer Conifers are dotted about, among which may be noticed some fine Deodars 30 feet high, planted twenty-four years; two fine specimens of Menzies' Spruce Fir (*Abies Menziesii*), one 28 feet, the other 35 feet high, and girthing from 3 feet to 5 feet in the stems, planted twenty-four years; a handsome Black Spruce (*Abies nigra*), 20 feet high, 2 feet in girth, thickly clothed with branches, the lower of which sweep the ground on all sides. There are two fine specimens of the Californian Cedar or Red Wood (*Sequoia sempervirens*); one is 29 feet high, with a stem girthing 4 feet 8 inches, and spread of branches 22 feet in diameter, twenty-four years planted, but this is the only sickly-looking tree in the place. It will never thrive, except in a genial moist climate. Of the Weymouth or white American Pine (*Pinus Strobus*) there are some remarkably fine specimens, especially two in a dell below the lawn, which are upwards of 40 feet, with stems of 4 feet 3 inches in girth, their branches extending and sweeping the ground to a considerable distance, clothed with drooping slender leaves, and with numerous long, green, sausage-like cones depending from the ends of the slender shoots. There is also a fine Japan Cedar (*Cryptomeria japonica*), 27 feet high, with a stem 3 feet in girth, and diameter of branches upwards of 20 feet, twenty-three years planted; a Lambert Cypress, 12 feet high, five years planted; a Spanish Fir (*Picea Pinsapo*), 14 feet high, thirteen years planted; a plant of the glaucous Red Cedar, 10 feet high; Spanish Pine (*Pinus Pyrenaica*), 29 feet high, with a stem 3 feet 2 inches in girth, twenty-four years planted; a plantation of Wellingtonia gigantea, 16 feet high, with stems 2 feet 9 inches in girth, eight years planted; a Californian Hemlock Spruce (*Abies Mertensiana*), 12 feet high, seven years planted. Many trees of the Bhotan Pine (*Pinus excelsa*) have attained a height of from 20 feet to 28 feet, with stems from 3 feet to 3 feet 3 inches in girth, and in all cases having ample room for extending their long slender branches, form beautiful objects, clothed as they are with long drooping silvery leaves, which give them quite the appearance of green fountains, especially when the sun shines upon them, and a slight breeze ruffles the leaves; the long green sausage-shaped cones, dangling from the ends of the branches, also add greatly to their appearance. There are a multitude of fine trees of the Chili Pine or Monkey Puzzle (*Araucaria imbricata*) grown on the lawn and other parts of the ground, besides those forming the long Araucaria avenue, the largest of which, planted nineteen years, are from 21 feet to 25 feet high, and girth from 2 feet 2 inches to 2 feet 8 inches round. Scattered about here are some handsome trees of the French variety of the Cluster Pine (*Pinus Pinaster minor*), which, after being planted nineteen years, have attained a height of upwards of 30 feet, with stems girthing 4 feet 2 inches. This variety is hardier, and resists the boisterous winds much better, than any other kind of Pine, and, in consequence, is extensively planted on the barren sands on the west coast of France, especially in the neighbourhood of Mans and in the Landes of Bordeaux. The way of planting Pines and Cedars alternately in rows along the outer parts of the grounds, so well shown here, produces a much finer and better screen to the property than is done by planting a thick belt of the commoner kinds, which in a short time defeat their object, having nothing but bare poles or naked stems, while the other gets larger and better every year, besides having a better effect. There are several Douglas Firs (*Abies Douglasii*), one a noble specimen, 38 feet in height, with a stem 5 feet 6 inches in girth, and amply furnished with branches, the lower ones sweeping the ground, and 44 feet in diameter in any direction; planted twenty-three years. Another Douglas Fir measures 38 feet in height, and girths 3 feet 8 inches in the stem; planted seventeen years. Some fine trees of the true Cluster Pine (*Pinus Pinaster*) are 40 feet high, and from 4 feet 8 inches to 5 feet 6 inches in girth; twenty four years planted. The fine Araucaria avenue or drive is a great feature, being 41 feet wide, with the plants 30 feet apart in the rows, and thirty-one plants on each side, varying in height from 10 feet to 28 feet,

and all now in robust health, the oldest being planted nineteen years, and others more or less recently.

Another feature, and one which deserves especial notice, is the way in which Mr. Bassett has ornamented that part of the public road which passes through his estate, by planting on each side of it, in corresponding pairs, some of the finer kinds of coniferous trees, such as *Picea nobilis*, *grandis*, *amabilis*, *magnifica*, *Lowiana*, *Nordmanniana*, and *Pinsapo*, with *Wellingtonia gigantea*, *Thuja gigantea*, and *Abies Pattoni*, all of which are now vigorous plants from 5 feet to 10 feet high, having been planted five years; and behind them, on both sides of the road, is a row of Deodar Cedars, from 27 feet to 32 feet in height, planted twenty-four years. The trees in the front rows are 18 feet from the Quick fence, and 42 feet apart in the rows, while the Deodars are 32 feet in the rear of the front ones, and alternately planted.

Mr. Bassett's Pinetum may still be said to be in a state of progression, for he keeps adding numbers of plants to his collection—all the newer and rarer kinds difficult to procure, which are distinct, hardy, and ornamental, together with a larger number of the finer kinds, of which only a very limited number previously existed in the grounds. If the plants are very small, or in indifferent condition when received from the nurseries, they are planted in a reserve garden or nursery until they are thoroughly restored to health and vigour. There are hundreds of kinds of our finest evergreen trees in the most perfect health, the whole presenting the best example we have seen of the advantage of the judicious planting of waste and sandy ground.

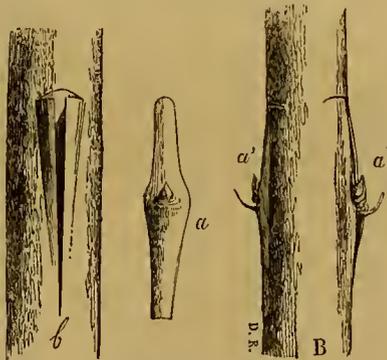
THE PROPAGATOR.

THE ART OF GRAFTING.

(Continued from p. 432.)

COMBINED SHIELD-BUDDING.

AN operator may be the most skilful of grafters, but no one can infallibly warrant the success of an operation. When a graft misses there is a year lost and sometimes a stock sacri-



Combined Shield-budding.

ficed. It is as well then to double the chances of success whenever the supply of buds will permit, and when the stock is of sufficient size for this purpose. Two buds (*a'*, *a'*) are inserted opposite each other, or if the stock is very strong three, and even four may be used. These buds being inserted at the same level, one bandage will suffice for all. As the insertion of the bud (*a*) in the incision (*b*) has to be repeated on the other side of the same stem, care must be taken not to force the upper part of the incision too much, for fear of making a circular rent. As the proper development of a tree does not require several grafts, as soon as they have taken, one only should be retained and all the others suppressed, pinching them at first in order to utilise them in a supplementary way. However, if it is required to form a fan or a double palmette, two opposite shoots, resulting from the insertion of two buds, should be retained. Combined budding is applicable to different methods of shield-budding, whether by inoculation or by veneering. Simple or combined shield-budding may be used with branches which it is desired to propagate as cuttings, when the stock succeeds better as a cutting than the scion; or else in the case of a variety which does not do well when branch-grafted, but which succeeds when shield-budded. This is grafting with shield-budded

scions. For instance the varieties of the Apricot and Peach which succeed with difficulty when branch-grafted, may be shield-budded in summer on Plum scions (as at C,C,C). In the following spring, the Plum branch is divided (as at B B) into portions, each bearing engrafted buds of Peach or Apricot), which are then grafted on a Plum stock,



Result of double budding.

Shield-budding Plum scions.

either by cleft-grafting, or in the English way, or by inlaying. The Plum scion unites with the Plum stock, and by extirpating any Plum buds which make their appearance on the former, none but the inserted buds of Peach or Apricot will be developed upon it. This mixed process is not without value when it is required to graft large stocks which are unsuited for shield-budding with kinds which do not take well when branch-grafted.—*C. Ballet.*

(To be continued.)

THE BUR REED FOR GRAFTING.

It is not sufficiently known that the dried stems of this common British water plant make the best material for tying buds and grafts that is known. There is a softness and withal a toughness



The Bur Reed.

about it which nothing else possesses. It grows by nearly all our ditches, rivers, and lakes, and its botanical name is *Sparganium*. When cut it should be dried on a left or in a shed, and preserved for use.

ELIZABETHAN GARDENING.

(Concluded from p. 445.)

ANOTHER primary object of the Elizabethan horticulturist was to render the garden a pleasant adjunct to the family residence at all seasons, by producing a flush of flowers or a display of attractive herbage all the year round. They did not, as in the modern fashion, plant a garden intended for every-day use with a few exotics which require expensive care ten months in the year, just to produce a showy blaze of hot colours for a month or two in the hottest part of the year. They endeavoured to supply a source of pleasure and delight all the year round, and to tempt the household to enjoy healthy exercise in the garden in every month of the year. To larger mansions were attached pleasaunces, specially devoted to winter exercises, "that when the wind blows sharp you may walk as in a gallery" (Bacon). Protected by thick Yew tree hedges, the "alleys ever finely gravelled," and the borders planted with evergreens of various tints—some dark green, others light, some variegated gold, some silver, with a few light deciduous trees for contrast—the winter garden afforded, even in the dreariest season, a sheltered walk, full of interest and beauty to the lover of Nature. Such gardens are attached to many of the old Elizabethan mansions which still remain to attest how grandly and with what magnificent taste men could once build their domiciles.

Lord Bacon, whose ideas were always magnificent, says, "I do hold it, in the royal ordering of gardens, there ought to be gardens for all the months of the year, in which, severally, things of beauty may be then in season. For December and January, and the latter part of November, you must take such things as are green all winter—Holly, Ivy, Bays, Juniper, Cypress trees, Yew, Pines, Fir trees, Rosemary, Lavender, Periwinkle—the white, the purple, and the blue; Germander, and Sweet Marjoram, warm set. There followeth for the latter part of January and February, the Mezeron tree, which then bloometh; Crocus vernus, both the yellow and grey; Primroses, Anemones, the early Tulip, Hyacinthus, Chamædris, Fritillaria, &c." And then he gives lists for each month in the year, adding "but my meaning is perceived, that you may have *ver perpetuum*, as the place affords."

But not only in royal gardens was this principle carried out. It was the fundamental principle of the gardeners of the period, that the garden was to be made as attractive as possible at all seasons.

Parkinson lays down the same principle for the guidance of persons having gardens; and gives directions how to select flowers "which do show forth their beauty and colour early in the year, that they seeme to make a garden of delight even in the winter time; and others which do give their flowers one after the other, so that whoever would have of every sort of these flowers, may have for every month several colours and varieties, even from Christmas until Midsummer, or after, and then until Christmas again; and that in some plenty, and that with great content, and without forcing; so that every man may have them in every place, at all times, if they will take any care of them."

This is the true secret of ordinary domestic gardening for the private individual of every class according to his means and the opportunities at his command, viz., so to order his garden that he may have delight in it at all seasons.

The modern horticulturist's idea of planting a garden is in such fashion that, for nine or ten months in the year, it shall be a desert without a flower or shrub of any interest. Your professed gardener has a limited catalogue of about a dozen plants, which he calls "bedding-out plants," consisting of Verbenas, Calceolarias, Tom Thumbs, Petunias, and a few others. On these he expends all your money and all his time and energies. He has but one idea; and that is, to force a few coarsely-contrasted plants, without scent, without variety, stiff and formless, to make a show of glaring colours during August and September. Hence it happens that we may visit a score of gardens in a year, and be unable to detect much difference between them. As to the form of the beds—at one time a sort of plaid prevails, at another the French carpet, at another the ribbon style. As to colour, there is no variety: the changes are rung on the same flowers—now it is Verbena, Lobelia, Geranium; then Geranium, Verbena, Lobelia; now yellow, white, blue, and scarlet; then scarlet, blue, yellow, and white. We just perceive distinctions without differences, until we become weary of the continued monotony, and fatigued with an oppressive blaze of vulgar colours.

This style may be all very well for the gentleman who visits his country seat for the shooting season, and spends the summer in London. It is sufficient for him to find his flower-beds as gay and glittering as the ladies who condescend to lighten the tedium of a country-house out of the season; but nothing can be more tasteless

and absurd than for those who live at their houses during the greater part of the year, and want a garden all the year round, to adopt this expensive fashion. It is not to be denied that there is a certain kind of brilliancy in this fashionable garden. It is gay, glittering, and exciting; but it is safe to deny that a tawdry blaze of scarlets and yellows is consistent with good taste, or has one-tenth the play of harmonious beauty and richness which a border of mixed colours possesses. Besides, there is the weariness and monotony of it. Your beds once planted for the season, must remain the same. The pattern, so elaborately designed, seen and admired, must remain before your wearied eyes all the months of its blossoming. There is no change; no variety. The flower you see one morning you must see the next, and the next, in wearisome succession. It is incapable of enjoyment except during a few months in the autumn. Now, it unfortunately happens that this is the season when, to the perennial dweller in the country, the garden is least required for enjoyment. It is the season when he is most tempted to take the air in the open fields or wild paths of Nature, or to visit the Continent or the seaside. It is the season when, during the day, the garden is hot and wearying, and rendered still more hot and wearying by the blaze of the same colours day after day; and when the evenings are getting damp and chilly. The domestic garden is most wanted at seasons when nature is least attractive; when the lanes are muddy, and the forest trees are bare of leaves; or else when the evenings are long, and the warm night air balmy and charged with perfume; when the blackbird is trilling his last good night, and the linnet is making its nest; and the black-cap and the nightingale,

In some melodious plot
Of beechen green and shadows numberless
Sings of summer in full-throated ease. Keats.

"Bedding-out" plants, too, are necessarily stiff and graceless, monotonous and uniform. They must not "wander at their own sweet will," but must conform to the requirements of the pattern elaborately designed on paper by the gardener. They are also generally deficient in one of the chief attractions of flowers—perfume. Moreover, they have no associations, no poetry, no sentiment; their names excite no pleasing fancies, no poetical associations, no historical connections. What possible idea can a scarlet Verbena conjure up, except that of a flat patch of bright colour? but who can look even upon a Daisy without calling to mind that it was Chaucer's favourite flower; to do homage to which, at its first opening, he rose early in the morning—

For to be at the resurrection
Of this flower * * *
Her cheer is plainly spread in the brightness
Of the sun, for there it will unclose;
Alas! that I ne had English rhyme or prose
Suffisaunt this floure to praise aright:

or that Burns has immortalised it as the "wee crimson-tippet flower;" or the numerous verses in which Wordsworth has enlorged it? What a fund of poetry, moreover, is there in the very names of the old flowers! Monkshood or Venus's Car, Love in a Mist, our Lady's Slipper, our Lady's Smock, Maidenhair, Venus's Looking-glass, Pansies, or Love in Idleness, Kiss at the Garden-gate, and the host of other pretty names for the Heartsease; Sweet William, Love lies Bleeding, and hundreds of other pretty fancies, almost forgotten, because your gentleman gardener won't let you have what he calls nasty common things—that is, plants which will grow and flourish without his skilful and well-paid manipulations.

We are quite aware of the difficulty which overrides all attempts to introduce a more wholesome taste in gardening. The owner knows little about it, and he is dependent on his gardener: the gardener is dependent on his trade for a livelihood; and his idea is, that his trade consists in producing, with as much labour and care as he can get paid for, several thousands of a dozen varieties of plants for "bedding-out." Having produced them with much care and at great expense, he is of course desirous to show them off to the best advantage; so everything else is rooted out of the garden under the name of "common rubbish;" formal beds are cut in whatever form happens to be the fashion of the day; and each sort and colour of plant is planted in a separate bed, in contrast to some other plant in some other bed, that it may be as conspicuous and glaring as possible. Your gentleman gardener, who pretends to "have a taste," and who regards his master merely as "the slave who pays"—which indeed for the most part he is,—does not condescend to know a common English flower. [We are glad to say that this is *not* true of many of our best gardeners—ED. GARDEN.] He does not know that God loves the commonest of His creatures as much as the rarest, and perhaps we might say more so; for that he has made them common seems to show that he loves them best and has more to teach us from them. At all events, it is not for man to call

anything that God has made "common or unclean;" and no right-minded man will despise or reject any of His works.

The Elizabethan garden was never without sundry arbours for shade and rest: either a pleached arbour, or one of topiary-work. Care was taken, whatever the material was composed of, that sweet-scented shrubs should surround and creep over it; either "honey-suckles ripen'd by the sun, forbid the sun to enter," or it was "quite over-canopied with luscious Woodbine, with sweet Musk-roses and with Eglantine." The Eglantine, from the sweet scent of its leaves, seems to have been invariably used as a part of the arbour—at least the Elizabethan poets rarely describe an arbour without it. Thus, Barnfield in "The Affectionate Shepherd:"—

I would make cabinets for thee, my love—
Sweet-smelling arbours made of Eglantine.

And W. Browne describes—

An arbour shadowed with a Vine,
Mixed with Rosemary and Eglantine.

In Spenser's "Bower of Bliss" the Eglantine forms a principal feature:—

—Art, striving to compare
With Nature, did an arbour green dispread,
Framed of wanton Ivie, flow'ring faire,
Through which the fragrant Eglantine did spread
His prickling arms, entrayl'd with Roses red,
Which dainty odours round about them threw;
And all within with flowers was garnished,
That, when mild Zephyrus amongst them blew,
Did breathe out bounteous smells, and painted colours shew.

From what has been said, we may deduce that the principles regulating Elizabethan gardening were as follows:—

1. To lay out the garden in accordance with the domestic architecture of the period, viz., in long terraces and right lines (forth-rights), to harmonise with the rectangular lines of the building, and the long galleries of the interior; and, at the same time, to break up the monotony of the straight lines with knots and beds, often of intricate patterns; in like manner as the bay windows, clustered chimneys, intricate tracery, and ornamented gables relieved the straight lines of the ground plot of the building.

2. To plant the beds with mixed flowers, and to let the colours so intermingle and blend together, that the whole should produce a mosaic of rich indeterminate colour; ever new and ever varying, as the flowers of different seasons succeeded each other.

3. To produce a garden of flowers and shrubs for all seasons, to tempt the owner to take pleasure and exercise therein at all times.

4. Another point which engaged the attention of the Elizabethan gardener—but which is necessarily neglected by the modern gardener, who is obliged to sacrifice everything to colour—was to give delight to the sense of smell as well as to the sense of vision. He was aware that to accommodate one sense at the expense of another could not afford any gratification; and he would not have filled his flower-beds with the strong aroma of Geraniums and Nasturtiums merely for the sake of their brilliant colour. So careful was he to avoid the least unpleasant taint within the precincts of the garden, that Bex for edgings, though preferred on every other account, was objected to, because it was alleged to have an unpleasant smell; yet to modern olfactories the dwarf Bex is nearly scentless. Great care was taken to introduce plants which should perfume the air of the garden at all seasons of the year, "because the breath of flowers is far sweeter in the air (where it comes and goes like the warbling of music) than in the hand, therefore nothing is more fit for that delight than to know what be the flowers and plants that do best perfume the air." (Bacon.)

For this purpose the evergreen sweet herbs were selected for border edgings; such as Germander, Thyme, Marjoram, Hyssop, &c.; and various sweet-scented shrubs and flowers were introduced into the borders merely for the sake of their perfume, though valueless for colour; and even, says Bacon, "you are to set whole alleys of them, to have the pleasure when you walk or tread." Indeed our ancestors seem to have taken more delight in the scent of flowers and herbs than we do. They were not troubled by any fantastic notions about their being unwholesome, and did not fear to introduce them freely into their domestic apartments and places of resort. The great banqueting hall was freely strewn with Rushes (the sweet-scented Flag, *Acorus Calamus*), Germander, Hyssop, and other sweet herbs grown especially for the purpose; and on high festivals the churches were strewn in like manner, and also decorated profusely with flowers—a custom still perpetuated in some country parishes, and of which the evergreen decoration of churches at Christmas is a universal remnant. Special times were appointed for the various plants to succeed each other; and the old recipe books contain elaborate

directions for "making a sweet strowing." We learn from Drayton the names of some of the favourite kinds:—

Some Lavender, with Rosemary and Bays—
Sweet Marjoram, with her like, sweet Basil, rare for smell;
The healthful Balm and Mint:—
The scentful Camomile, the ver'rous Costmarie;
Clear Hyssop, and therewith the comfortable Thyme;
Germander with the rest, each thing then in her prime.
Amongst these strowing kinds some others wild that grow,
As Burnet, all ahead, and Meadow-wort they throw.

The times for changing the "strowings" we learn from a song of Herrick's. Christmas was ushered in with Rosemary and Bays, Mistletoe and Holly; which at Candlemas gave place to Box until Easter, when Yew took its place; at Whitsuntide the Yew was succeeded by fresh budding twigs of Birch; after which the summer furnished "Rushes, Bents, and cooler oaken boughs," till winter required evergreens again. We are not prepared to try it ourselves; but we heartily recommend some of our friends who are far gone in mediævalism to substitute strowing herbs in their apartments for carpets, which, for the floor, are quite a modern innovation.

But seriously we do recommend that the Elizabethan house, be it large or small, should have the garden which adjoins it laid out in the style of the same period, since there is nothing in it incongruous to modern notions of convenience or taste. Like that of the house, it is a style suited to an abode of any extent, and it may be equally adapted to several acres of land, or to 500 square yards. Like that of the house, it is a style peculiarly domesticated and English, for it affords to its owner a smiling welcome all the year round. The flowers which deck it are for the most part old familiar faces, so long introduced into this country that they are almost like natives; many of them are familiar to our literature, are endeared by pleasing associations, and sanctified by the highest efforts of poetical genius. While they have enough of art to indicate that they pertain to the abode of man and owe their place to his care, they have enough of Nature to lead the mind to the works of the Great Author of Nature. Their subdued colours harmonise with the English climate; and the constant variety of form and colour which each day presents, as the flowers of the mixed border develop themselves, affords a constant source of pleasure and varied enjoyment. We cannot say the same of the modern fashionable garden. Its colours and forms being fixed for the season, there is no further interest in watching its progress, and there are no changes to note; its colours, well adapted to the climates whence the plants are brought are, in this country, glaring, hot, and vulgar, and are rendered still more so by the manner in which a vulgar, uneducated taste violently contrasts them. They are so formal, harsh, and artificial that it is impossible to regard them as works of Nature; but only as the studied efforts of the professed gardener. They are strangers to us and have no familiar greetings to welcome us; no poet has sung their praises; no peasant has given them a loving and heart-stirring English name. They bloom but for two or three months, leaving the gardens desolate and unwelcome all the rest of the year, and are, therefore, unsuited to the residence of the great majority of Englishmen, who have but one abode, and spend the whole of their lives within it. There is no reason why recently-introduced plants should be excluded from the Elizabethan garden. It would be a ridiculous pedantry to limit its flowers to those only introduced in that period. On the contrary we would imitate the Elizabethan gardener in this—that we would seek out new plants wherever we could find them. But even if some strict pedant were—like the modern mediævalist in church decorations—to insist that none but plants known at the period should be introduced into the garden, he would find an abundant supply in the old gardening books. He would from these be able to make a selection far more numerous than the modern horticulturist can boast of; for in gardening, as in many other things, the rage for novelty has superseded numerous valuable varieties of flowers, which have either wholly disappeared, or are only to be occasionally met with in some cottage garden or old-fashioned mansion.—*Fraser's Magazine.*

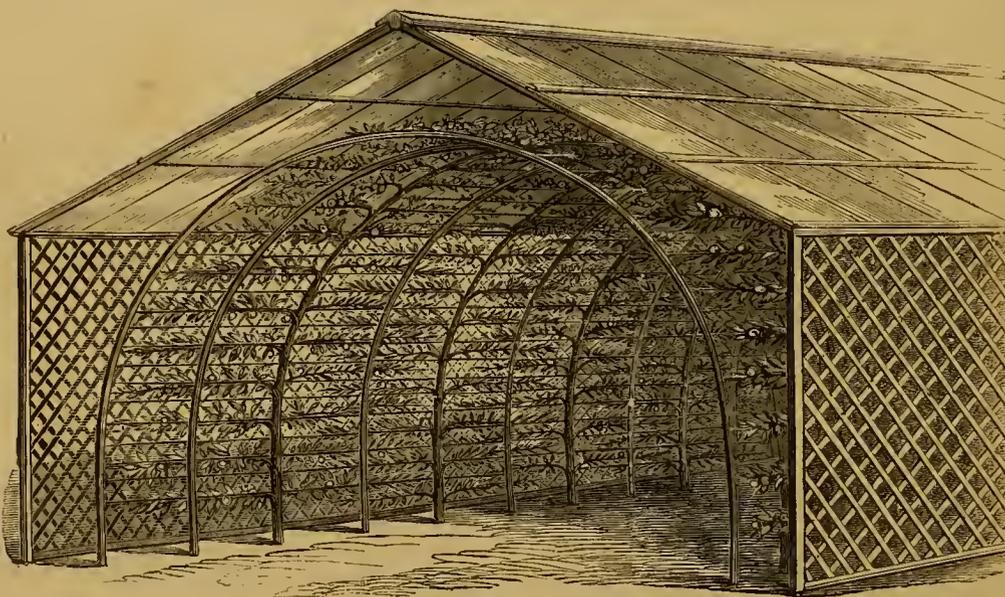
India-rubber—The belt of land 500 miles north and 500 miles south of the equator, abounds in trees producing india-rubber. These trees stand so closely together that a man may tap 80 in a day, the daily average yield of each being three tablespoonfuls. Forty-three thousand of these trees have been counted in a tract of country a mile long by eight wide. There are in Europe and America more than 150 manufactories of india-rubber articles, employing 500 operatives each, and consuming more than 10,000,000 pounds of gum a year, and yet the business is considered to be in its infancy. To whatever extent, however, it may increase, there will still be rubber enough to far exceed the demand.

GARDEN STRUCTURES.

A RUSTIC ORCHARD HOUSE.

THIS is simply a glass roof, with latticed sides, placed over trees trained on wire trellises. In many gardens trellised walks of choice fruit trees already exist. Nothing could be simpler than the enclosing the sides with open rustic work, and placing such a roof over the trees. This would be all that is needed to ensure a crop. Few things in kitchen gardens are more ornamental than arched fruit trees, or espaliers, or cordons beside the main walks. The chief drawbacks are the spring frosts that come down with their most destructive force on fruit trees thus displayed. Protect the trees with a glass roof and a crop becomes almost certain. Then the comfort of such roofs in affording a cheerful dry promenade in wet weather would add immensely to the enjoyment of a garden, and as the sides would be open, such roofs might be made permanent or otherwise at pleasure. Any number of rows of pyramidal Pear, Apple, or Cherry trees could be protected into fruit-bearing by the same means. Of course the largest areas could be covered; but a space containing two or three rows of pyramids, graduated as to height, with a walk down

never attained the popularity which the sound principle they illustrated deserved. In some important respects a thick Holly, Box, Hornbeam, or Beech hedge is preferable to the latticed sides. If evergreen it is much warmer when the warmth is most needed in the spring. In summer a thick screen of leaves might prove too warm. However, I have frequently seen the original hedge orchard houses at Sawbridgeworth, and they were, and indeed are, a success. They had one drawback—the screen is apt to feed at the same table as that at which the plants screened live. Another objection is, that some hedges, such as Beech especially, are apt to harbour or breed aphides. Again, it takes years to get up hedge sides of sufficient height and thickness, and to purchase them ready grown would cost more than Mr. Rendle's houses complete and ready for use; so upon the whole the rustic sides are perhaps as good or better than hedges. They may be put up at once; indeed, in many gardens they exist already, either in the form of wood or iron. All that is needed in such cases is to span two espaliers with a glass roof projecting well over. Cover the sides with trees on the inside at least as well as the trellises under the roof. Let the roof project 6 or 10 inches, and both sides might be furnished thinly with trees. But the inside fully furnished would be the best method. Both sides



A Rustic Orchard House.

the centre, would be highly ornamental, and probably more convenient, and also more reasonable as to price than any other. In fact, these roofs form cool orchard houses at once, without the labour and cost of ventilation. In favourable climates, Peaches, Nectarines, and choice Plums may be ripened in them; and they are just the thing for Apricots, that are more impatient of a close atmosphere than any other stone fruits. The finest crops of Apricots I have ever seen were grown under a glass roof with one side wholly open. The wall was covered with trees, and a row of bush trees was also planted along the front, about 6 feet from the wall, and nearly touching the open space. The crops were immense in quantity, and the quality superb. During very severe weather, in March or April, canvas was suspended by rings to hooks in front; it was put up or taken down as fast as a man could walk, and never used unless the frost was severe. Mr. Rendle recommends putting canvas covering over the latticed sides during very cold weather. With this there is little doubt that these glass roofs will carry Peaches, Nectarines, and Apricots safely through any kind of weather; for fruit blossoms have one wonderful advantage under glass roofs—they are dry, and in this dryness as much or more, perhaps, than in anything else, consists their safety. Mr. Rendle's rustic orchard houses are, in principle, but a return to Mr. Rivers's hedge orchard houses. These

covered might darken the interior too much. This furnishing of the sides would enable us to press furnished espaliers into our service at once, or form and plant new ones on purpose. Wooden sides are very pretty to look at, but they are expensive at first cost and in paint and repairs; iron would be much cheaper in the end. Perhaps the best of all sides would be formed of a few strong iron uprights to support the roof, filled in between with galvanised rolls of 2, 3, or 4 inch wire netting. The first cost would then be the only one; the trees could readily be trained to the netting, and the temporary canvas suspended from the projecting roof eaves, which would form the coping. Or, better than either, moveable or fixed glass walls might be employed for sides, thus converting the rustic orchard-house into a real glass fruit house, at such seasons when the safety of the blossoms or the speedy and certain maturation of the fruit rendered it desirable to do so. But a house similar to that represented by our illustration would be likely to prove extremely useful in providing a maximum amount of protection at a minimum of cost in material and labour. We gladly hail it, therefore, as a step in the right direction—that of providing more glass at a cheap rate for the successful culture of tender fruit in the open air, and the rescuing it in its danger periods from the destructive grip of frost. As temporary shutters

these rustic orchard houses meet a pressing want, and as permanent structures they may readily be made ornamental as well as useful.

D. T. FISII.

PUBLIC GARDENS.

KEW GARDENS AND THE IPECACUANHA PLANT.

PROFESSOR OWEN has very imperfectly stated the facts respecting the cultivation of the Ipecacuanha plant at Kew and in India. My friend Mr. McNab says of the Ipecacuanha (*Trans. Bot. Soc. vol. x. 319*): "It is a plant of remarkably slow growth; the largest plant in the Botanic Garden at Edinburgh is scarcely 1 foot in height, although more than thirty years of age, and has three leading shoots, each 4 inches in length. The method hitherto adopted of propagating the *Cephaëlis* (as far as I am aware) is by cuttings, but of these not more than one or two can be got at a time, and at long intervals." It was the possession in the Edinburgh Botanic Garden of old long-established plants, with well-developed, rhizome-like rootlets, and the difficulty experienced there in obtaining cuttings, which suggested to Mr. McNab a method of propagation which has since been found exceedingly successful, and for which he deserves every possible credit. In a printed report to the Secretary of State for India Dr. Anderson states: "It was when examining the old plants, in order that the best method of propagating might be determined on, that it occurred to Mr. McNab that the numerous root-like tubers might be taken advantage of as a means of rapidly increasing the plant." At Kew no such great difficulty has been experienced in increasing the Ipecacuanha by ordinary cuttings, the original specimen having during the last six years been by this means increased manifold. On the other hand, the constant demand for cuttings from the Kew plant has prevented the formation of the tuberous rhizomes which in the case of the Edinburgh one were the result of thirty years' growth. As far as the resources of Kew Gardens would allow, all three presidencies of India were supplied with Ipecacuanha plants, not once only, but at various times. Most of these perished in India, some from being planted in unsuitable sites, others from accident; and it was not till 1868 that its cultivation promised success, upon which its propagation on an extensive scale was ordered by the Government of India. Of the plants sent to Calcutta from Kew, one which arrived in 1866, had in 1869 produced twenty plants; of these twelve were sent to Sikkim, where seven were "killed by a coolie falling on them and completely smashing them." The further history of the remainder is detailed in Dr. King's report, which is quoted by Prof. Owen, but in a very unfair manner. The passage which he has extracted proceeds as follows beyond the point where he stops: "The five plants in Sikkim were, early in the current year, submitted by Messrs. Gammie, Bierman, and Jaffrey, of the Cinchona plantations, to a most successful experiment in artificial propagation, by which four hundred cuttings were obtained, the greater proportion of which have formed good roots, and are now fine healthy little plants." That the cultivation of Ipecacuanha should be taken up at Edinburgh is nothing more than might reasonably be demanded of a garden maintained at the national expense. It was indeed an arrangement which the residence at Edinburgh of Dr. Anderson, the then Superintendent of the Calcutta Botanic Garden, who was home on sick leave, rendered eminently desirable, and one upon which I was fully consulted by the Government, as appears in Dr. Anderson's report already quoted. Nor, in reference to the subject, should it in fairness be suppressed, that not only has the successful introduction of the Ipecacuanha into India been due to the establishment at Kew, but that Kew has at the same time supplied living plants to Ceylon, the Mauritius, Jamaica, Trinidad, Barbadoes, Queensland, and various home and continental gardens.

THE WELWITSCHIA.

Professor Owen again appears to have been completely misinformed in respect to *Welwitschia*, which he implies had been sent to Kew in a state fit for cultivation. A very large and old specimen, with the tap-root chopped off before its arrival, was placed for convenience in a pot of earth, and exhibited in the succulent house, where it would be likely to attract much attention, and would also be in contiguity to other plants from the same region. This was done without the slightest expectation of its showing any disposition to grow, and solely to gratify the public curiosity. On the appearance of symptoms of decay from the dampness incidental to a greenhouse, it was at once transferred to the museum, where it now remains. Professor Owen, apparently quoting a statement in my memoir on *Welwitschia*, pointedly alludes to the fact that "cones with ripe seeds" had been received at Kew, but he omits to give the following words, "the albumen of which was perfectly rotten;" and when

alluding to my acknowledgment of the receipt of "fine young plants," he does not add that these were Dr. Welwitsch's specimens gathered years before.

THE NATIONAL HERBARIUM.

Professor Owen refers to my answer to Q. 6,661 in the evidence given before the Royal Commission, as having by groundless insinuation "inflicted pain on fellow servants of the State and collaborators in science, on men at least his (my) equals, and one of whom in a recondite botanical problem has shown himself his (my) superior." As Professor Owen does not quote this question and answer, I shall do so. They are as follows:—Q. 6,661.—"Has there been insufficient space in the British Museum for the reception of specimens for the enlargement of its herbaria, or has any other obstacle interfered?"—A. "With regard to the British Museum I do not think any person can answer that except the officers of the establishment. I do not think that the nature and extent of its botanical collections or their condition is well known except to its officers." I leave it to the reader to say whether any possible insinuation could be conveyed in such an answer, and, being unconscious of any, shall conclude with expressing my conviction that here again Professor Owen has been misinformed.

Royal Gardens, Kew, Nov. 15.

J. D. HOOKER.

GARDENING ROUND LONDON.

(DURING THE PRESENT WEEK.)

BY OUR SPECIAL REPORTER.

PRIVATE GARDENS.

The Flower Garden.—Beds filled with spring flowers, green and growing a little, have even now a cheerful appearance. Dutch bulbs, in some places, are yet being planted, but the majority of them has been planted some time. Ornamental trees and shrubs are being planted, and plants of autumn-sown golden *Feverfew* are being put into frames, where they can be protected from frost. *Calceolaria* cuttings in frames are kept rather close, except in open mild weather, when they are well aired. Carnations in some places are lifted and transplanted in frames, and *Phloxes* in pots are also stored quite thickly under glass; as are likewise many of the finer kinds of herbaceous plants and some sorts of *Sempervivum*, *Echeverias*, and *Sedums*. Any of the strong-growing *Echeverias*, such as *metallica*, that were taken up and laid aside indoors until now, are being potted. Any having undesirably long stems are cut off just under the lowermost leaves, and are treated similarly to cuttings. Their tops are set on the surface of pots filled with loam and a little sand, into which they soon strike root and become established. Autumn-struck *Pelargoniums*, and also such as were lifted from the open air, are kept moderately dry, and frequently examined for the purpose of removing decaying leaves or anything else calculated to engender damp, which is so much dreaded this month. Roots of good kinds of *Hollyhocks* are lifted, potted, and placed in a close greenhouse or pit, and all the shoots produced, as soon as strong enough, are taken off and used as cuttings. From roots of *Dahlias* all decaying portions that may exist are removed, and if dry enough some straw is laid over them. *Cannas* are commonly wintered dry under greenhouse stages, as are also roots of *Fuchsia fulgens*. Hardy *Fuchsias*, such as *Riccartoni* and *gracilis*, are cut over; the roots are mulched with leaves or rough litter, and the stalks are fastened on the top, to prevent the mulching from being blown about. *Myrtles*, *Bays*, *Loquats*, and other somewhat tender plants on walls, have a light framework of stakes erected in front of them, so that they may be readily covered with mats in the event of severe weather. A slight frame is also erected over tree *Pæonias* for the same purpose. Herbaceous borders are being cleaned, manured, and dug; but the division of the plants is generally left till spring, when they begin to grow. Box edgings are being lifted, cut up into as many pieces as have roots to them, and are relaid.

Conservatories.—*Chrysanthemums* keep these at present gay; they are kept well watered, and divested occasionally of all shoots that will make cuttings for next year's plants. *Solanums*, of the *Capsicastrum* section, are also now very ornamental, especially some of the new hybrid kinds, the berries of which are larger and brighter than those of the common sort. *Cyclamens* coming into bloom are kept near the glass in the warmer parts of greenhouses: they, however, enjoy a free circulation of air, which is always maintained. Of Chinese *Primulas*, the farthest advanced are brought into conservatories, and succeeding portions are kept in frames. *Sericographis Ghiesbreghtii*, one of our most valuable winter plants, is now coming nicely into bloom, as is also *Libonia floribunda*, likewise an invaluable plant for winter decoration. *Azaleas*, *Camellias*, and *Heaths* are arranged so as they can receive plenty of light; they

are also kept in a moderately moist condition. The earliest Cinerarias are now coming into bloom, and are placed at the warmest corner of the conservatory for a week or so, when they will be removed to a cooler position. Cinerarias and Calceolarias in frames are shifted as they require more pot room. If climbing plants, trained along rafters, in any way darken the house, they are thinned or cut in. Daturas, Erythrinias, Clerodendrons, &c., cut over, are placed where they can be kept pretty dry throughout the winter. Tropæolum tricolorum and Jarratii receive frequent attention in the way of training, for if allowed to grow for a week or more without inspection the young shoots are apt to get broken. Japanese Lilies are repotted and placed in dry situations in greenhouses.

Stoves.—These range from 60° to 65° at night, and from 70° to 75° during the day. The syringe is dispensed with, but a humid atmosphere is maintained by damping the paths and stages. Palms cannot withstand with impunity the effects of drought, and the same remark applies to Musas, Screw Pines, and indeed to many evergreen shrubs. Cycads even, although they can bear dryness at the roots longer than most plants, are nevertheless best kept a little moist. Ferns are well watered but not syringed. All young ones are repotted as soon as they become fit for the operation. Such large Ferns as are repotted are placed in warm quarters to induce them to strike root in the new soil more readily than they otherwise would do. Selaginellas are divided and repotted.

Orchids.—Many of these are now finely in flower, more especially some of the species and varieties of *Cypripedium*, *Odontoglossum*, *Oncidium*, *Phalænopsis*, *Calanthes*, *Phaius*, and others. In the East Indian or warmest Orchid house a night temperature of from 60° to 65° is maintained, while in the intermediate house it is 5° lower, and in the *Odontoglossum* or cool house 5° lower still; atmospheric humidity is maintained in all these houses, but more especially in the warmest one, in which the plants are also kept a little moist at the roots. The syringe is entirely dispensed with now in Orchid houses; such plants as are on blocks are taken down when necessary and dipped in water, for if the syringe were used for damping them where they hang the drip resulting therefrom would be likely to rot the crowns of plants growing underneath them. *Anætochili* still growing apace must be kept a little moist, though not so much so as hitherto. *Pleiones* that have finished flowering are shaken out of their pots and repotted into a mixture of loam, peat, moss, and sand, and afterwards placed in a brisk temperature. *Calanthes* that have finished blooming are stored away under stages or are set on side shelves and kept pretty dry. *C. Veitchii* and the red and yellow-eyed varieties of *C. vestita* are now in great beauty. Newly imported Orchids are spread out on tables, suspended by the roots, or potted amongst half-inch crocks alone, and submitted to atmospheric humidity only until they show renewed signs of life.

Fruit and Vegetable Forcing Department.—Some of the earliest started Vines are having their fruit thinned, others are breaking, and others again are being brought on in succession. All that have ripened their wood well are being pruned, and any Grapes still hanging are cut off, with a few inches of wood attached to them, and kept in the fruit-room in bottles of water. For Cucumbers a high temperature is maintained, and a moderate amount of moisture at the root, but the syringe is not much used. French Beans are sown as required; ten weeks generally elapse between sowing and gathering. Mushroom beds are bearing well both indoors and out, though the weather is somewhat trying to the latter. Successions of Chicory, Dandelion, Seakale, and Rhubarb are forced in the Mushroom house. Asparagus roots are generally forced in frames or pits, at a temperature of 60°. Endive as required is lifted from the open air or from pits, and placed in the Mushroom house some days prior to using it. Some heads of it are, however, blanched in the pits by covering them with an inverted flower-pot.

Hardy Fruit and Kitchen Garden.—Fruit trees, both in orchards and against walls, continue to be planted, and both these and bushes to be pruned. Gooseberry bushes are, however, generally left unpruned till spring, as they are often greatly injured by bulfinches, and if left till then the shoots most injured can be cut out. The spaces between both bushes and trees are being manured and dug up roughly but not deeply, especially near the roots. All empty spaces in the kitchen garden are manured and deeply dug, or thrown up in rough 2-foot ridges. Any plants of Walcheren and Erfurt Cauliflower forming hearts, are lifted and laid in thickly in the corner of a dry shed, or vinery, or orchard-house at rest. Broccoli plants are lifted from where they are growing and laid in pretty thickly, with their heads facing the north. Coleworts for seeding are selected and planted together in some spare corner. Ground cleared of Celery is planted with Cauliflowers under cloches. Those in frames are well aired, and wood ashes are scattered among them to check damp. A good store of rough litter and other

protecting materials is kept in readiness for protecting the tops of Celery in the event of frost. When necessary, early Peas pushing through the ground are protected by laying some Pea-sticks over them; a little lime is also scattered about them, to prevent the attacks of slugs. Of Seakale and Rhubarb fresh plantations are being made to replace those lifted for forcing. Asparagus roots are also being lifted for forcing, and beds intended to be kept for next year are mulched with short litter, over which some soil is thrown to keep all in proper position.

NURSERIES.

Indoor Department.—Large Heaths, *Aphelaxis*, *Chorozemas*, *Boronias*, &c., are being restaked. Where symptoms of mildew are apparent in Heaths, they are dusted over with flowers of sulphur. Young *Camellias* are being looked over; their pots are being washed, the green part of the surface soil removed, the leaves sponged, and the plants then placed on stages near the glass. Straggling shoots of *Azaleas* are being tied in, an operation unnecessary, however, in the case of small plants, which, owing to repeated summer pinchings, are already sufficiently symmetrical. Oranges and other plants of the Citron tribe are placed in intermediate houses, and kept a little drier than ordinary, but not altogether dry. *Hæmanthus* are being potted in leaf soil, loam and sand, and placed under stages or on side shelves of intermediate houses or stoves. Some of them have already made two large leaves; others are only starting. Fine-foliaged *Begonias* are placed on shelves near the glass, in a night temperature of 60°; such as are deciduous are stored under stages, where the roots can be kept dry, along with *Caladiums*, *Gloxinias*, *Achimenes*, and a few other Gesneraceous plants. *Begonia* roots, however, may, if required, be kept in a cooler situation than the plants just named; for the *Begonias* a night temperature of 40° is sufficient; whilst for *Gloxinias*, &c., it is unsafe to subject them to a temperature under 45°. Fresh importations of Cycads have been received in some places. Their roots, or rather short trunks with a few roots attached to them, are potted into comparatively small pots, in a mixture of peat, loam, and silver sand, the latter in tolerable abundance. They are then placed on the back shelf of a stove, and kept rather dry until they begin to emit fresh roots and form new leaves, when the supply of water will be increased. *Kennedias* and similar plants are being repotted into a mixture of leaf-mould, yellow loam, and sand, and are placed in a cool house. *Vallota purpurea* is stored below stages in greenhouses and on shelves in sheds. Young Palms are stored on shelves at the backs of stoves. Palm seeds sown in pans are also placed anywhere in stoves where they are out of the way. The majority of stove plants are kept moderately moist at the root, it being considered that more evil results from over drought than from anything else during winter treatment. *Anthurium Scherzerianum* is being top-dressed with sphagnum.

MARKET GARDENS.

In some gardens Cabbage plants have all been planted, in others a good stock yet remains to be put out; as a rule, however, Cabbage plants are not too plentiful this season; although so late in the year the ground among growing crops is kept well stirred up. Cauliflower plants are moved from beds in the open ground and placed under handlights, nine plants being set under each light. The handlights stand about 6 feet apart each way, and three lines of Coleworts are planted a foot apart in the middle of the intervening spaces. Cauliflowers in frames have the sashes kept on night and day during showery weather; they are however, tilted up back and front, and in fine weather are removed altogether during the day time and replaced at night. Lettuces in frames have just formed the first two rough leaves. Dry sand is scattered amongst them in order to check damp. As regards air they are treated precisely as Cauliflowers are; Turnips from August sowings are now in excellent condition, and the largest are thinned out for market, leaving the smaller ones more room to develop themselves. Celery is still excellent; the first crop of it has been cleared off, and the second or main crop is now being lifted. Forcing of Seakale, Rhubarb, and Asparagus is now engaging attention. For Seakale a 5 feet wide bed is made upon a 2 feet basis of fermenting manure; the roots are then placed thickly in lines on this bed, about 6 or 8 inches apart, and as soon as they begin to grow more soil is put over them so as to blanch them. Hoops and mats are sometimes put over the beds. Rhubarb is similarly forced, only the roots must of necessity be farther apart, and they do not require additional covering of soil, but instead a coating of litter; over these beds hoops and mats are placed so as to protect the leaves and keep them clean. For Asparagus, trenches are taken out 3 feet deep and 5 feet wide; into these fermenting material is put. The Asparagus may then be treated as Seakale, or instead of hoops and mats frames and sashes may be used. It is not advisable to lift Asparagus plants in a flourishing plantation, for forcing, *i. e.*, if they can be had from beds that are patchy or full of blanks.

THE GARDEN.

—o—o—o—
 "This is an art

Which does mend nature: change it rather: but
 THE ART ITSELF IS NATURE."—*Shakespeare.*

VARIEGATED PLANTS.

ONE of your correspondents, speaking of pure white Geranium shoots (see p. 464), asks the question, have any of your readers ever been able to strike and retain such shoots as plants? If we consider a little what causes this variegation we shall come to the conclusion that the answer must be—No. Chlorophyl, the name given to the substance that gives green colour to leaves, is not only necessary to the well-being of plants, but absolutely (in certain proportions at least) required for their very existence. And the only exception registered that I know of a pure white cutting having rooted is that of *Glechoma hederacea*, spoken of by "Pepin" in the *Journal de la Société Horticole* of 1863. And even of this case I have my doubts, not for one moment supposing there could be wilful misrepresentation, but because a mistake may so very easily be made. If the cutting were taken off ever so little below where the variegation begins, so as to include ever so thin a slice of stalk furnished with chlorophyl, roots may possibly be evolved, and the chlorophyl spreading upwards might cause the plant to live on and vegetate, but in this case the leaves would become more or less variegated with green. That chlorophyl does spread into such portions as may be devoid of it can be seen by causing roots, such as Carrots and deciduous plants, such as Fuchsias, to emit entirely white shoots, by keeping them in a dark cellar, and gradually exposing them to the light. If the shoots be not too long, so as to wither up, they will gradually become green; that is to say, a certain quantity of globules charged with chlorophyl will ascend, in the one case from the green crown of the Carrot, in the other from the green under-bark of the branches, and these will spread and multiply, gradually colouring the whole liquid contained between the cells of these shoots. If we mark with a bit of string a certain number of the young leaves of a variegated Sycamore, chosen among those almost entirely white, we shall perceive, on visiting them occasionally, the gradual spread of green veins, blotches, and other markings; and these not only come, but often go away again. I use the term "go" and "come" because it is not a mere appearance or disappearance; the globules charged with the resinous pigment circulate, and whatever be the cause that makes them deviate from and avoid certain portions of a plant or leaf, it is a sign of disease. This disease partakes very much of the nature of "chlorosis" in the human being, in both cases characterised by a diminution of the colouring matter under the epidermis, *i.e.*, of chlorophyl in the sap, and of hematosine in the blood, both substances containing a mixture of iron, necessary to organic life. In both cases also the remedy is the same—a generous diet; this and chalybeates, iron filings, or salts of steel, and other preparations of iron, will bring back green to the leaves and roses to the cheeks.

Now, although no plant entirely white can live, and although all those more or less variegated are diseased, yet for all practical purposes of ornament a very great number of the latter are quite hardy enough. Some of them in certain respects may be even harder than the green type; a few of the new variegated Aucubas, for instance, perfectly withstood six degrees below zero of Fahrenheit in my garden last winter, while their green types lost all their leaves and stems down to the ground. But in general, and especially with regard to the sun's rays in very hot weather, there is not the slightest doubt that the variegated leaf is much the more delicate. The white and green variegated *Tradescantia* and *Caladium argyrites* will shrivel up at once. The white-leaved *Negundo* has its foliage almost always grilled in our summers, even the variegated *Plane* never looks well in August. A proof that variegation is always accompanied by, and is a sign of want of vitality, is, not only the wonderful quickness with which plants thus affected return to the green state as soon as they are well fed, but also the great difficulty

experienced in preserving some of them in the desired state of unhealthiness; Cloth of Gold Geranium, for instance, be it as yellow as a guinea in its thumb pot, will here become as green as any other zonal in a very short time after being put out in the open border; and as for the *Tradescantia* with the white centre, it is impossible to preserve a decent-sized plant of it; it has to be renewed by cuttings monthly, not to say weekly, so pertinaciously will it emit green shoots from the axis of almost every variegated leaf. The same may be said of *Reineckia*, *Sedums*, and a host of variegated plants. It is very probable if zonals would stand the winter, and could be left out as perennials for a series of years, that all their gold and silver would soon disappear.

Chlorophyl, according to De Candolle, may be of other colours besides green, so that *Perilla nankincensis* with its black chlorophyl, and Copper Beech with its purple, may be, and are, as is shown by experience, quite as hardy as the green. It is the absence of the substance that characterises disease, not a mere difference in colour. It plays a great part in the assimilation of the food of the plant, which may easily be demonstrated by watering a *Fuchsia*, covered with white shoots, grown in a cellar; they will all very soon damp off and rot, a proof that they cannot digest and throw off the excess of liquid. The same applies to a zonal Geranium with one or more entirely white shoots; these will damp off and rot at once, while the partially green ones will thrive under the same amount of watering. The individuality of each bud, in a tree or plant, being now pretty generally admitted, chlorosis or variegation attacking only one or more of these, leaving the rest of them green, will astonish no one; and the same of their partial or entire recovery. Many contend that variegation is a mere "sport" or difference of molecular arrangement. I have tried to prove that it is a derangement of the organism; in other words, a disease, slight or serious as the case may be; of little moment in most cases as to ornamentation, but certainly to be avoided in planting trees for timber or shelter—Maize, Wheat, grasses, or roots for human food or for cattle—in fact it is never done, a good proof that the idea is pretty general that variegation is a disease.

Versailles.

FRED. PALMER.

WATER IN THE SHADE.

Is not your correspondent "H. N. H." (p. 469) a little in error when he associates the magnificent lake at Blenheim with the Round pond in Kensington Gardens and the Serpentine as being deficient in shade? The lake at Blenheim I consider to be one of the finest attempts at artificial lake making in the country, and one attended with the most satisfactory results, both as regards its outline and the manner in which that outline is broken up by judicious planting. If your correspondent remembers, the lake, from the bridge downwards, is nicely varied on the one side with fine specimens of Cedar of Lebanon, and farther westward, for nearly the whole distance, the margin is well wooded with Beech and Oak, the branches of which, in some instances, come in contact with the water's surface. On the other side, the pleasure ground runs the entire length of the water margin, which is broken up at intervals with a variety of well-selected trees, among which are some very fine *Ailantus glandulosa*, which, by the way, used to flower and seed very freely. I have no object in making these assertions beyond that of rendering honour to whom honour is due, and by all means let "Capability Brown," who made the lake in question, have the honour for his work which he so well deserves.

A. J.

Wild Gardening.—I am making a "wild garden," and I am anxious to know whether I could induce any climbing plants to grow up some bare Larch and Spruce Firs. How far should I plant them from the trees? I have tried *Clematis montana* and *Flammula*, but they do not do well. Would *Wistaria*, *Virginian Creeper*, or *Banksian Roses* be likely to succeed? and when should they be planted? Some parts of the wild garden are a stiff clay; what shrubs or flowers would do well in it?—B. [The best way would probably be to lop the heads and living branches off a few of the "bare" Firs, &c., and then, using these as great stakes, you may grow many things well, planted as closely to their base as you like. What would succeed best on a stiff clay soil would be the stronger-growing plants of the great order Compositae, of which large numbers are in cultivation. There are, however, many plants not in this order that would do equally well. A suitable selection will be found on p. 139 of "The Wild Garden."]

NOTES OF THE WEEK.

— THE Rev. Mr. Reynolds Hole's book, "The Six of Spades," has just appeared—too late for a more lengthened notice this week. It is published by Blackwood & Sons; it is well printed; neatly bound, and has the following graceful dedication:—"To all true gardeners, whether they serve or rule, this book is offered with a brother's love."

— ONCE more the varieties of the charming *Cyclamen persicum* begin to adorn our greenhouses, and will continue to do so for months to come. The meeting-room at South Kensington was quite gay with them the other day, a large batch being shown by Mr. R. Clark, market gardener, Twickenham.

— In gardens where the *Ferulas* (Giant Fennels) are grown, they are now pushing up their elegant leaves, at present from 15 inches to 2 feet in length, and finely and gracefully divided as a delicate filmy Fern. They will one day be found indispensable to every good collection of hardy plants, being quite unique in aspect and as hardy and easily grown as the common Dock.

— GOOD specimens of the Newtown Pippin Apple, such as are now to be obtained in our markets, are among the most desirable fruits we know of. The flavour is as peculiar as delicious. We trust this fine Apple will receive much more attention in our gardens than it has hitherto got, and be also better known at our desserts than ever it yet has been.

— AMERICAN letters from Mr. Taplin, of South Amboy, inform us that there the ground is white with snow, and that 15° of frost have already been registered. Apples, he adds, are keeping badly this season, and so are Potatoes—the former owing, he thinks, probably to the long very hot summer experienced in New Jersey this year.

— OUR friend, Mr. Winthrop Sargent, of Wodenethe, Fishkill, on the Hudson, writes thus to us of the hardness of *Aralia japonica* [canescens?] in the Northern States of America: "I have a plant of it in my shrubbery about 28 feet high, and from fifteen to eighteen years old, covered at this moment (Nov. 23) with immense masses of purple seed-vessels. It has withstood, uninjured, our severest winters, when the thermometer frequently indicates from 10° to 15° below zero, Fahr., without any protection, and it never fails to flower most profusely every year in September.

— THE unseasonably mild weather which we have had has produced, it is said, a spring-like aspect in Kent, and near Keston Common acres of Primroses and tufts of Snowdrops are in blossom; the banks are covered with Violets, the Furze is in full bloom, and last week a nest of young thrushes was taken out of a Holly tree near Holwood Park.

— WE learn from India that the subscriptions at first designed to honour the advent of his Excellency the Viceroy in a blaze of illuminations and fireworks, at Bombay, have been more rationally dedicated, at a public meeting, to the creation of a garden in the centre of the native town, to be called "The Northbrook Garden."

— THE beautiful plant of *Calanthe Veitchii* shown at South Kensington on Wednesday is, we are informed by Mr. Dominy, to whom belongs the honour of raising this precious hybrid, the finest he had ever seen. The plant in question was grown and [shown by Mr. John Jaques, gardener at Hooley House, Coulsdon, Surrey.

— AFTER the Persian *Cyclamen*, the most important greenhouse flower of the season is the Tree Carnation. The fragrance and rich colour of these plants should give them a place in every collection. They are grown to a vast extent in all the large American cities, for the purpose of affording cut flowers in winter.

— A SALOP correspondent informs us that he has this season taken two distinct crops of *Magnum Bonum* Plums from the same trees. From the first bloom the trees bore a very fair crop, which ripened early in September. In the end of May a second crop of bloom showed itself, from which fruit was produced, and on the 9th of October five quarts of green Plums were picked and made into jam. The trees, four in number, were young standards.

— MR. CLARSON, Director of the Victorian Horticultural Society's Garden, at Melbourne, recently called on us and furnished some highly interesting information as regards Apple culture in Australia, which had been greatly impeded by American blight. Out of 600 varieties of Apples growing in the garden there, some have been found absolutely free from this pest under all conditions, and these are Northern Spy, Winter Majeting, Early Crofton, New England Pigeon, Charleston Pippin, and Sabbart's Codling. Court-Pendn-Plat, Gravenstein, Duchess of Oldenburg, and Isle of Wight Pippin are also very slightly affected. The important fact once discovered that these varieties

were exempt from blight, it became an important object to secure an abundant stock of them. After trying various experiments, grafting cuttings of the desired varieties on bits of roots, and then planting these thickly in borders, proved to be the best plan. An upward cut was made near the base of the scion, so as to form a tongue, and under this the prepared end of a piece of root, with a few fibres attached to it, was inserted; the two were then firmly tied together by means of a strip of calico, but not clayed, and thus treated every scion grew. These facts are likely to prove of importance for us as well as for our friends at the antipodes.

— FEW indoor shrubs equal in beauty or sweetness the glorious *Luculia gratissima*. Of this Mr. Robert Veitch has now a magnificent specimen, bearing 138 trusses of bloom open and not open. This fine plant is growing in the bed of a conservatory in his nursery at Exeter.

— SOME very fine smooth Cayenne Pines were sent from the Royal Gardens at Frogmore to Kensington on Wednesday. Of these one weighing 9 lbs., and three 8 lbs. each, were gathered, so we were informed by Mr. Murray, manager of the forcing department, from plants eleven months old "from the sucker."

— FINE as *Amarantus sulcifolius* is with us in England, it is greatly inferior, at least in size, to plants of it grown in the Northern States of America. Mr. Sargent writes to us concerning it as follows: "I have a specimen of it in my garden on the Hudson, measuring 9 feet 8 inches in height, one mass of exquisite orange-crimson and mauve from top to bottom."

— ONE of the best exhibitions of fruit we have seen for a long time was at South Kensington, on Wednesday, sent all the way from Gothenburg, in Sweden, where the large and highly-coloured examples of Pears and Apples had been grown in pots by an English gardener.

— WE have just seen a life-size photograph of a very remarkable new zonal *Pelargonium*, raised by Dr. Denny, of Stoke Newington. The flower measures 2½ inches in diameter! It has not yet been named, and, of course, is not yet obtainable from nurserymen.

— THE time, we understand, has nearly arrived for closing the subscription list to the Frost testimonial. Any further support intended to be given it should not, therefore, be longer delayed. In handing in his subscription to this testimonial, the Rev. Mr. Reynolds Hole says:—"To the only Frost that Florist ever loved (when that Frost breaks up, may it be for an eternal Spring!), I have true pleasure in offering a small proof of my brotherly esteem. The testimonial is a just one, and will, I trust, be a source of happy satisfaction to the worthy old gardener."

— DR. PFEIFFER has issued a volume of a "Nomenclator botanicus," which will contain in alphabetical order all the collective names, from sections to classes inclusive, which have been employed in systematic botany from the time of Linnæus up to 1858, the date to which Dr. Pfeiffer brought his already published "Synonymia botanica." The present work will really form a skeleton encyclopædia of systematic botany. Each article will commence with the etymology of the name and the original authority for it, to be followed in chronological sequence by the different views that have been taken of its systematic position, including references to the works of all systematists by whom each particular view has been adopted. The articles will, therefore, be complete historical digests, the utility of which can only be estimated by those who have had occasion to prepare anything of the kind in connection with their own studies. The present work, when completed, will take its place beside such books as Steudel's "Nomenclator," Pritzel's "Index Iconum" and "Thesaurus," Walper's "Repertorium" and "Annales," as another of those indispensable aids to study which the laborious students of Germany have given to the botanical world. An especially important feature of the new work is that it includes Cryptogamicas as well as Phanerogamic plants. No general view of the genera of the former exists later than that given by Endlicher eighteen years before, and it is often troublesome in consequence to run down a name in this branch of botany. Dr. Pfeiffer reasonably remarks that it was necessary to place some limit to his labours, and if one which is now fourteen years distant seems needlessly remote, he meets the objection by saying that he did not anticipate that it would have required so long a period of time to accomplish his task. It can hardly be doubted that, when the scientific history of our own day comes under review, the value of labours, like those of Dr. Pfeiffer, in their influence on the progress of knowledge, will be estimated hardly, if at all, lower than that of actual scientific discovery.—*Academy*.

— In the Press.—New work by Mr. Rimmel.—"On the Expression of Flowers." (We scent a hoax in this announcement.)—*Fun*.

THE INDOOR GARDEN.

COLLECTING ORCHIDS.

IN speaking of Orchids in general, it almost amounts to more than ingratitude if we omit to mention those brave and enthusiastic men who have from time to time risked health and even life itself in their worthy endeavours to enrich our collections with these the most lovely denizens of tropical climes. We allude to collectors—men who have in most cases left home comforts behind them, and, fired with enthusiasm, have explored the primæval forests of the tropics, climbed the mountain chains, or scoured the trackless savannahs in their search for beautiful plants. Orchids are found in nearly all latitudes, and at nearly all elevations in the tropics, from the sea-level to the snow-line, in both northern and southern hemispheres, and

periodical rains; and Orchids, in common with the adjacent vegetation in general, live and luxuriate in the genial warmth and exciting moisture, so beneficial to the growth of plants. Here in England, and throughout northern Europe, we have dull, cloudy days for a considerable portion of the year, and as a natural consequence we seldom obtain the rich coloured flowers or the constitutional vigour, though in some cases we may obtain pseudo-bulbs and flower-spikes of approximate size. Some marshy and malarious districts are richly stored with rare and valuable plants, and the poor though anxious collector has often to suffer severely from both fevers and ague, in his endeavours to obtain new or rare additions to our already rich collections. The richest collecting grounds are most frequently found in the immediate vicinity of large rivers or mountain streams, and in our illustration the Orchid collector has succeeded in climbing one of the monarchs of the



The Orchid Collector.

it is in the tropics or sub-tropical regions that Orchids luxuriate in the richest profusion. In temperate countries most of the Orchids are terrestrial, and derive their nourishment more directly from the earth's surface, but in the humid tropics the case is altered, and the majority of the Orchids become epiphytes, leaving the cold earth and climbing the loftiest trees of the dense forests. In these tropical forests budding, flowering, leaf-shedding, and decay are continually going on; the plants do not suffer the two extreme degrees of heat and cold so familiar to us; the genial heat is tolerably regular, the humidity far greater, and the copious light and free circulation of air more conducive to their growth and healthy vigour than the comparatively poor cultural positions and advantages, often disadvantages, that we are enabled to give them here at home in our collections.

Old leaves and even fallen trunks of trees are speedily dissolved, as it were, by the tropical sun, and the heavy dews, or

forest which towers far above the surrounding vegetation, and is to some extent rewarded for his exertions and fatigue, by finding himself surrounded by glorious masses of Orchids, the lovely and sweetly perfumed blossoms of which droop in rich clusters on all sides. Here, far above the placid water of the lake or river below, exposed to the free influence of the gentle breezes, partly shaded from the rays of a vertical sun by the overhanging foliage, and copiously watered by dews, Orchids luxuriate and multiply in countless thousands. The local conditions and surroundings in which the same species of Orchids are found are well-known to vary to a considerable extent, and our collectors have to subject themselves to extreme vicissitudes of both heat and moisture in order to gratify our taste for rare and lovely novelties. We might add a long list of the names of successful collectors, did our space permit, but we must rest contented with what our memories can supply. The Royal Horticultural Society of London and our

National Botanic Garden, added to the enterprise of enthusiastic amateur cultivators, and the more speculative of our nurserymen, have contributed to the collecting and introduction of Orchidaceous plants.

Among those who have done much for us in this direction we may mention the brothers Lobb, well-known collectors, employed by Messrs. Veitch, who through their aid contributed many valuable plants to our collections from India, Borneo, Java, Sumatra, and Japan; Linden, Hartweg, Bowman, Pearce, Veitch, Fortune, Weir, Wallis, Roezl, and others equally worthy of mention in our columns on account of their selections from different tropical floras. Then again Ellis, Benson, and Parish have done good service by their introductions from Madagascar and the continent of India. In the introduction of Peruvian, Mexican, and hardy European Orchids, Messrs. James Backhouse & Son, of York, deserve mention, for to them we are indebted for the fine masses of autumnal and winter-flowering *Lælias*, many *Oncids*, *Odontoglots*, and last, but not least, for the rich golden-yellow "Pelican flower," *Cypripedium irapeanum*. We have yet many fine cool Orchids to import from Northern India, and the great mountain range of the South American continent is as yet far from exhausted. Rare pitcher plants still exist only on the rocky sides of Kina Balu, the Andes of Borneo, while the Cape Disas, *Satyriums*, and *Habenarias* are in the main unknown to cultivators. We hope that the day is not far distant when the cooler growing Orchids from temperate regions in Europe and America shall at least find a place in our great public gardens, and be cultivated energetically, as they most assuredly deserve. H.R.H. the Comte de Paris has been one of our most successful cultivators and exhibitors with regard to hardy European species, and we hope others may follow such a good example.

F. W. BURBIDGE.

THE CAMELLIA PLANTED OUT.

NEARLY everybody grows Camellias, and they are so tractable that few completely fail with them. But there is a vast difference between sparsely-leaved specimens that one often sees in pots, and the rich, impenetrable green of those treated to a sufficiency of food, or in other words, with root-liberty. When well grown, the Camellia is as beautiful in dress as any other evergreen; indeed, we have seen beds in the open air which were masses of dark and shining green to the very surface of the earth, and more attractive to the eye than any of the other numerous evergreens about. The general way of growing the Camellia is in pots, and a good plantsman will grow it to great perfection in pots and in tubs; but then it involves a great deal of trouble—regular watering, careful potting, and what not—and after all the result is often unsatisfactory, from the spare and thin clothing of the specimens—a habit not at all natural to the Camellia. It will not, like soft-wooded plants, such as *Geraniums*, stand disrooting and repotting without injury, and then come away and make a better plant than ever within a few months of the time of disrooting. But plant it out in a bed of good soil, where the quick-feeding roots can revel in a moist equable medium—not chilled, heated, thoroughly wetted and thoroughly dried alternately, as is the case when the plants are grown in pots—and what a change soon begins to show itself! We know of nothing else which displays such a difference in that respect, or is more thankful for any obscure corner in the conservatory or greenhouse. It will do best planted out and allowed to grow as a shrub, but against any back wall flourishes most luxuriantly, and flowers freely. This should be taken advantage of by many troubled by their back walls, which too often produce nothing but flowerless climbers, mere hunting grounds for insect vermin. Indeed, we should prefer the Camellia, if it never flowered, to many of these, in consequence of its rich verdure at all times, and its valuable quality of not becoming drawn, and consequently ragged at the base, like nearly all other shrubs that are planted out in a greenhouse. In a comparatively dark house the lower branches and leaves of Camellias planted out look almost as well and healthful as those on their upper surfaces, while the reverse of this habit makes it impossible to plant out *Acacias* and such things with any hope of satisfaction. Of all the indoor gardening that we can call to mind, houses devoted to the Camellia planted out are those that have impressed us as the most satisfactory. The Camellia house at Bicton, with the beds of abundantly blooming sweet Violets running along outside and in front of it, is more like a Camellia grove than a "glass house;" while the great house at Pince's Nursery at Exeter, the Camellia house at Chatsworth, that long beautiful promenade at Chiswick House with Camellias below and graceful *Fuchsias* depend-

ing from the roof, and the fine iron houses in the Jardin Fleuriste de la Ville de Paris and in the Luxembourg, are all among the noblest and most satisfactory specimens of indoor gardening.

However, there are but few who can devote a house solely to Camellias, while numbers grow them with other plants. They by no means need a special house for their culture, as they will grow to perfection in the bed of a conservatory, on the floor of an orchard house, or any like structure, and, as before mentioned, against the back walls of all cold houses. In this last way an extensive plantation of them may be seen in Messrs. Veitch's nursery at Chelsea, covering the wall on either hand of a long house, through which the visitor must pass to visit the hothouses there, and another plantation at Grove Bank, near Kingston. There are, indeed, few places where the plant is grown that space may not be spared to plant out a few specimens; while in many that we know of there is plenty of little-used space that might be utilised for the production of splendid bushes of the Camellia. As to the soil and preparation for its planting, very little need be said, for it is not particular. We have seen it flourish in sandy peat in Paris, and grow as well as could be desired in turfy loam in Devonshire. The fact is, any good open loamy soil, not a limestone soil, will suit it well, with good drainage. Little attention is required after planting, except the pleasant one of gathering the flowers when required, and slight and occasional stopping of the growing shoots; no troublesome and ceaseless watering, and none of the various potterings that accompany the culture of the plant in pots. In large tubs, in which the plants are thoroughly well placed as to soil and drainage, and then left without disturbance for half a dozen years or so, the advantages of allowing Camellia roots to quietly feed in plenty of root space will be also seen. But these tubs are awkward to move and manage, except where help is abundant, and in all cases very expensive. Therefore, the rule should be to plant out wherever we have an opportunity of doing so.—J. B.

THE GENUS BEAUCARNEA.

WE find this genus treated in the following manner by Mr. Baker, in the *Journal of Botany* for November:—

KEY TO THE SPECIES.

- Leaves flat, $\frac{1}{2}$ —1 inch broad, not bordered, minutely serrulate, much recurved.
 - Leaves green, an inch broad.
 - Panicle lanceolate. Veins prominent 1. *longifolia*.
 - Panicle lanceolate. Veins obscure 2. *recurvata*.
 - Leaves glaucous, half an inch broad 3. *stricta*.
 - Leaves flat, an inch broad, not serrulate, bordered with a thin red line and dehiscent thread. 4. *Bigelovii*.
 - Leaves narrow, $\frac{1}{2}$ — $\frac{3}{4}$ inch broad, usually channelled down the face, serrulate, not bordered.
 - Caudex, a low hemispherical mass, bearing numerous rosettes. 5. *Hookerii*.
 - Caudex, an elongated trunk, bearing a solitary rosette, rarely forked 6. *erumpens*.
 - Leaves splitting into a tuft of fibres at the apex
 - Leaves entire at the apex.
 - Leaves stiff, channelled down the face. Scape very short. Panicle dense 7. *Hartwegiana*.
 - Leaves flat, recurved. Scape as long as the lax panicle 8. *Lindheimeriana*.

1. *B. longifolia*, sometimes called *Yucca longifolia* and *Dasyliiron longifolium*. A native of Mexico, first brought into notice by Karwinski forty years ago, and now spread widely in gardens. Several specimens may be seen in the Cactus-house at Kew, and in the collection of Mr. Wilson Saunders. The trunk reaches a height of 4—5 feet, and attains a thickness of half a foot upwards, dilated suddenly to a foot at the base. Leaves in a dense rosette of 100—200 or more at the summit of the caudex, 4—5 feet long, 9—15 lines broad above the dilated base, similar to those of *Yucca recurvifolia* in texture, so pliable that the outer ones curve over from the base, and the innermost from halfway up, so that the trunk is quite hidden from view, flat to the very point, narrowed from the base to the tip very gradually, not at all glaucous, furnished with 30—40 deep distinct veins, the edge minutely but distinctly serrulate, not otherwise bordered. Flowers in a short-stalked thyrsoid panicle.

2. *B. recurvata*.—Also a native of Mexico, gathered first by Galeotti, and introduced into cultivation in 1845 by Van der Maelen, of Brussels, and soon spread widely by Messrs. Verschaffelt and others. The original specimens sent to Europe were labelled "Frey-cinetia," and it was through the miscopying of this by a gardener that the name "Pincinetetia," which will be found spread widely in conservatories and trade catalogues, originated. Several forms may at the present time be studied in a living state in the Cactus-

house at Kew, and in the collection of Mr. Wilson Saunders. Its general habit is just like that of the last species. Trunk reaching a height of 6 feet, 2—3 inches thick upwards, dilated to a foot at the tuberous base. Leaves 100 or more in a very dense rosette, recurved from the very base, 3—5 feet long, $\frac{3}{4}$ —1 inch broad above the deltoid base, narrowed gradually to a long subulate entire point, the colour green, not at all glaucous, the nervation not so distinct as in the last, and the marginal teeth visible only under a lens.

3. B. stricta, sometimes called *Pinciniotitia glauca*. A native of Mexico, introduced at the same time as the preceding, and now widely spread in cultivation. It is grown at the present time both at Kew and Hillfield. The general habit is just that of the two preceding. From the narrow-leaved forms of the last it may be known by its still narrower leaves, with deeper veins, decidedly glaucous colour, and more distinct marginal serration. In the finest specimen seen the trunk was 3 feet high, a foot thick at the base, 3 inches thick at the middle. The ribs are about twenty in number and very conspicuous. *Stricta* is a misleading name, as all but the central leaves hang over from near the base.

4. B. Bigelovii, called also *Dasyliroium Bigelovii*. Gathered by Dr. Bigelow in 1853-4, in the exploration under Lieut. Whipple, for the survey of the route for the Pacific Railway, on mountain sides along the Williams River, California; and by Schott, in Sonora. A very distinct species, not yet introduced into cultivation. Trunk 6 feet high, 2—3 feet in diameter. Leaves 3—5 feet long, reaching an inch broad above the deltoid base, rigidly coriaceous in texture, thicker than in the three preceding, glaucous-green, narrowed gradually upwards, the point not seen, the veins 40—50 in the lower part, very close and deep, the edge bordered by a fine distinct red line, with a thin grey thread beyond it, which breaks away slightly, like the border of *Yucca filamentosa*, entirely without serrulation. Scape 6—8 feet high.

5. B. erumpens, likewise called *Dasyliroium erumpens*. A native of hills and gravelly places in New Mexico and Western Texas; not known in cultivation. Leaves thick, rigidly coriaceous in texture, 2 $\frac{1}{2}$ —3 feet long, $\frac{3}{4}$ — $\frac{5}{8}$ inch broad above the deltoid base, which reaches an inch, narrowed gradually to the point, where it is split into a tuft

of fibres like those of *Dasyliroium acrotrichum*, channelled all down the face, the veins close and deeply impressed, rounded on the back, with the central nerve more prominent than the rest, the edge scabrous with minute teeth.

6. B. Hookeri, also called *Dasyliroium Hookeri* and *D. Hartwegianum*. A native of Mexico, in the neighbourhood of Real de Monte, sent to Kew in 1846 by Mr. Repper. It flowered in 1859, and was figured in the *Botanical Magazine*, and there are two fine plants at the present time in the Cactus-house. Professor Thiselton

Dyer states that it was flowered this year by Dr. Kellock. Extremely different from all the preceding in general habit, as the caudex forms a hard hemispherical woody mass, which in the Kew specimens is about 2 feet broad by a foot high, divided out into irregular rhomboidal raised portions with linear depressions between them, bearing all over hard round knots an inch thick, from which the rosettes of leaves spring. Leaves about fifty to each rosette, bending over from near the base, the outer ones 3—3 $\frac{1}{2}$ feet long, a quarter of an inch broad near the base, narrowed gradually to the entire point, rounded on the back, slightly channelled down the face, glaucous, the veins about a dozen, distinctly raised, the serrulations of the border distinctly visible to the naked eye. Panicle on a short scape, 12—18 inches long.

7. B. Hartwegiana, likewise called *Dasyliroium Hartwegianum*, *D. junceum*, *Cordylino longifolia*, *Roulinia longifolia*, and *Beaucarnea gracilis*. Dried specimens seen from Mexico, plains near Zacatecas, Hartweg, 406; and Texas, Lindheimer, 550, 712, and C. Wright, 692. The garden plants described from barren specimens may possibly prove, when fully known, to be distinct from *Cordylino longifolia* of Bentham, but so far as present infor-



Beaucarnea recurvata (from a plant in Mr. B. S. Williams's collection).

mation goes, there is really absolutely nothing to justify their separation. Does this exist anywhere in English gardens at the present time? Trunk said to be similar to those of *recurvata* and *glauca*, but less elevated. Leaves very different, "absolutely spreading very rigid," 2—3 feet long, 2—3 lines broad above the base, narrowed gradually to a long entire subulate point, channelled down the face, the back hemispherical, with often a distinct keel, the veins of the lower part not more than 6—8, distinctly elevated, the edge scabrous, with

minute denticulation. Scapo none, or very short. Flowers in a close, oblong panicle, 9—12 inches long, by about half as broad.

B. Lindheimeriana, also called *Dasyliiron Lindheimerianum* and *D. tenuifolium*. A native of Texas, gathered by Lindheimer and Wright; in New Mexico by Bigelow, and in Sonora by Schott. Not now in cultivation. Trunk reaching a height of 4—5 feet. Leaves like those of *B. Hartwegiana* in shape, size, and veining, 2—3 feet long, 3—4 lines broad above the dilated base, the blade not so thick and rigid in texture and nearly flat on both sides, narrowed to an entire point, the edge distinctly serrulate, the lower part with 10—12 distinct veins. Scapo 1—2 feet long, bracteated with 3—4 ascending reduced leaves. Panicle 1½ feet long by half as broad, the branches much fewer and more distant than in the last, spreading or ascending, even the lowest nearly or quite simple.

WATERING PLANTS IN POTS.

NUMEROUS are the inquiries as to the time and frequency of supplying greenhouse and other indoor plants with water—their most important want. The curious part of the matter is that people, almost in the same words, seem to take it for granted that it should be done at stated hours and intervals, as if, in this variable climate, it was as easy a matter to cultivate tender plants, growing under artificial conditions, as to appoint the hours for relieving a sentry guard. Those who water their plants at regular intervals and give each about the same quantity of water, are pretty sure to kill some of the most valuable and delicate, as in a conservatory or other house full of plants there is scarcely one but will differ from its neighbour in the amount of water it requires at this season, even if the plants are all of the same species. In a mixed collection the difference in the amount of moisture to be supplied is very considerable. Succulent plants—Aloes, Yuccas, Cacti, Mesembryanth, and such fleshy-leaved subjects—require little or no water from the beginning of November to the end of February; at least, such is the rule among good cultivators, though we believe it is not wise to apply it rigidly to some of these plants, which are apt to shrivel and get hurt if allowed to become dusty and dry. Pelargoniums, again, though they must not get quite dry, require to be kept comparatively so in winter till their flower buds are formed. Plants in a vigorous growing state, or coming into flower, as some are at all seasons, will of course require to be well supplied with water; that is, they require to be as moist at the root as we keep growing plants in summer, only that one-third the amount of water and watering which would be required in summer will suffice to keep them moist at this season. It is impossible to lay down a rule which would be of the slightest use as to the time of watering, &c.; it must be left to the cultivator's judgment. So frequent were the bad results of promiscuous and regular watering in the generality of gardens fifteen or eighteen years ago that an outcry was raised about over-watering, &c., which certainly made no inconsiderable improvement, but was also productive of much evil by making people err in the other direction—by not giving enough of water. We certainly have seen more plants killed and injured of late years from want of water rather than from an excess of it. In one particular instance a splendid and very valuable collection of specimen Camellias was ruined, from being kept too dry in a very cool house, the cultivator thinking they should be kept dry because the house was colder than such houses usually are. The treatment might not have had a bad result with many plants, but it killed the Camellias. A healthy-growing plant in a pot, which is, as it ought to be, thoroughly well drained, cannot well have too much water when it is watered. *Do not water a plant till it requires it, and then give a thorough soaking.*

We are now dealing chiefly with greenhouse and conservatory plants, about which most inquiries have been made; but the rule is equally good for stove and pot plants in every situation. In hot summer weather, plants should be examined every morning, and in most cases watered; and in the case of free-growing Fuchsias and other soft-growing plants in the height of their bloom, it may sometimes be necessary to water well twice a day. In the dead of winter, every second day is sufficiently often to look over greenhouse plants, and then not one in ten may require watering. The waterer should begin

regularly at a certain place in the house, and examine every plant. After a little practice he can readily detect those that are dry by merely looking at the soil; but in cases where the specimens have been top-dressed, &c., and soil without roots in it lying on the top of that full of roots, and where had watering has been practised, so that the earth is wet on the top and dry at the bottom, it may be necessary to strike the pot with the knuckles to see if it sounds hollow. This indicates want of water. When a crack is seen between the soil and pot, it is an almost invariable sign that the plant wants watering. When the operator meets with a dry plant, instead of pouring a little water on the surface, as many do, he should fill the pot quite full, and if there is not a good space for water between the soil and top of the rim, he should return to it and fill up again, so as to insure a thorough soaking, for a plant wet at the surface, and dry as dust down where its main roots exist, is in the worst possible condition. In fact, it is not a bad plan to make it a rule to water cross-feeding and large specimens twice when they get dry. Great harm used to be done in old times (and very often, we fear, in these advanced days) by pouring on a little sip every morning, which resulted in the pots becoming covered with green slime, and the soil often a mass of black mud. The same regular examination should occur every day in summer, only less care will be required. When rapid growth begins in the first bright days of March, too, the plants must be looked over every morning, and from that time to the end of October. Some people fill the pots with too much soil, and do not leave sufficient space for a proper dose of water to be poured on; this is a bad plan, and has caused the death of hundreds of valuable plants. As a rule, the pot should not be filled higher than within half an inch of the brim, and in the case of large pots an inch. When settled down there will then be sufficient room for water, and sufficient opportunity to give a good drink at once—not watering again till the plant really wants it. One good watering in mid-winter will often satisfy a healthy specimen plant in full leaf for two or three weeks; ten weeks later it may require watering every day.—R.

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Restio subverticillata (Willdenovia teres).—This is a very ornamental plant for a cool or intermediate house; it would form a striking object planted out in the subtropical garden during the summer months, or it would form a conspicuous object in a conservatory planted in the natural style. Of this plant there is a fine specimen in the Edinburgh Botanic Garden, 5 or 6 feet high, and 3 or 4 feet in diameter. When I saw it it was throwing up some fine strong growths. It is propagated by division and grows freely when liberally treated.—B.

Nertera depressa.—This peculiar little plant is grown in the rich collection of Mr. John Waterhouse, Halifax, Yorkshire. Imagine a pot or small pan of the dwarf growing *Selaginella densa*, or *S. apus*; suppose moreover that by some accident a coral necklace has been broken and its scarlet beads scattered over the *Selaginella*, and you have the nearest of all similes to this interesting little plant. It is decumbent in habit, and has very small cordate leaves and scarlet berries the size of small Peas. These are borne very profusely by healthy plants.—F. W. B.

Genetyllis fuchsoides.—This is one of the best of our hard-wooded greenhouse plants, both as regards freedom of bloom and the length of time during which it lasts in perfection. It is an Australian species, the branches of which are red, and the leaves dark green above, but of a lighter colour underneath. Owing to the profusion of red bell-shaped flowers which it produces when well grown, it is a plant much used for exhibition purposes. It may also be had in bloom from September until Christmas, and even later. A cool airy house and good sandy peat and turfy loam suit this plant best.

Ort have I walked these woodland paths

In sadness, not foreknowing
That underneath the withered leaves
The flowers of spring were growing.

To-day the winds have swept away
These wrecks of autumn splendour;
And here the fair *Arbutus* flowers
Are spruiging fresh and tender.

O perfect flowers with line of bloom!
Surpassing in their beauty
The pearly tint of ocean shells,
To teach me faith and duty.

Walk life's dark way, ye seem to say,
In hope and faith, foreknowing
That when man sees but withered leaves,
God sees the flowers growing.

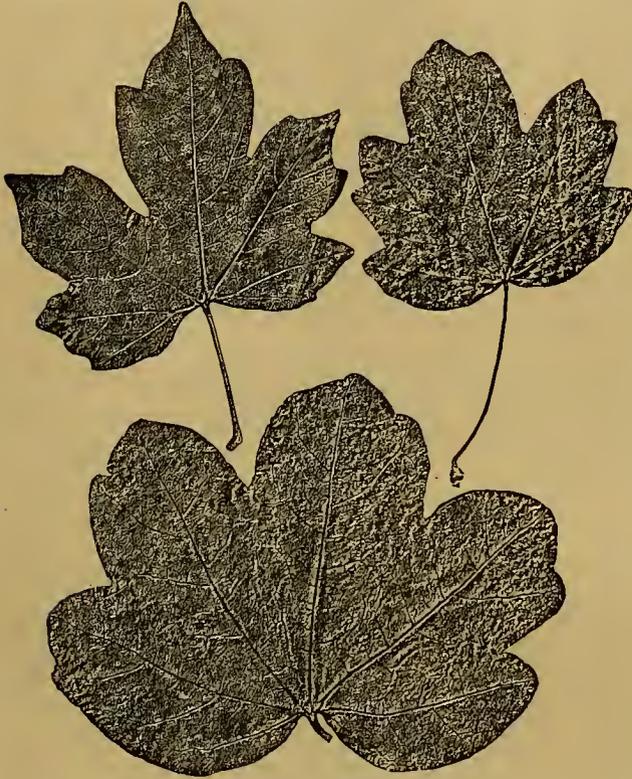
THE ARBORETUM.

HARDY TREES AND SHRUBS.

BY GEORGE GORDON, A.L.S.

THE FRENCH OR GUELDER ROSE-LEAVED MAPLE
(ACER OPULIFOLIUM).

This forms a middle-sized tree, from 20 to 30 feet high, with a dense round head, the lower branches of which are rather slender, much divided, and spread horizontally. It is a native of the Pyrenees and the French and Swiss Alps, particularly among the rocks on Mount Jura. The wood of this Maple is

Leaves of *A. opulifolium*.

considered preferable to that of all other kinds; it is hard, compact, and so homogeneous in texture as to render it almost impossible to distinguish the annual layers. The leaves vary very much in size and shape, and when full grown are smooth and deep-green above and pale and downy beneath, particularly along the veins and in the axils of the principal ribs. The leaves produced on the stronger spray and near the base of the

Fruit of *A. opulifolium*; natural size.

young shoots are large, nearly round, cordate at the base, and bluntly five-lobed, with one or two visible obtuse serratures on the three outer lobes, but as the leaves approach the ends of the branches they diminish in size, become more pointed and more deeply divided, until those nearest the ends of the twigs are as small and very similar in shape to those of the

common field Maple (*Acer campestre*). The flowers are small, greenish-yellow, and are produced on long, slender, hairy footstalks, in short, loose, branching, erect racemes at the ends of the young twigs in May. The keys or fruit are large, bright green, and quite smooth, with thin carpels and large, broad, horizontal wings. There are several synonymous names for this kind to be found in botanical works, the enumeration of which would be of little use, as they are now either disused or applied to other kinds. It, however, may be useful to mention that the name *opulifolium* is frequently misapplied either to *obtusatum* and *opalus* or to the variety of the common Sycamore, named in nurseries *coriaceum*. There is a tree of this somewhat scarce Maple in one of the wide glades on the north side of Kensington Gardens, 30 feet high, with an ample round dense head as much through. It has a clear stem 8 feet in height and 4 feet in girth, covered with rather thin, grey, corky bark, full of small fissures. The length of a full-sized leaf is $7\frac{1}{2}$ inches, including the footstalk, which is from 3 to $3\frac{1}{2}$ inches long, and the breadth is about 5 inches.

THE TURPENTINE FORESTS.

An interesting account of the great turpentine forests of North Carolina is given by a correspondent of the *New York Tribune*, writing from Fayetteville. The forests, which he visited, are not dark and gloomy, as they are generally described. On the contrary, they are so thinly wooded as to afford scarcely any shade. The tree from which the turpentine is obtained is what is known as the long-leaved Pine (*Pinus palustris*). This tree abounds in both the Carolinas, in Georgia, Alabama, and some of the other Southern States, but it is found only where the original forest has not been removed. When once cut down it never grows again. If the land is allowed to fall out of cultivation it is followed by a growth of Oak, and this in turn is replaced by a Pine of an inferior kind. The turpentine Pine is tall and straight, from 3 to 5 feet in diameter to a height of 40 or 50 feet. It is without branches except at the top. The turpentine in its crude state is obtained by tapping. About a foot from and parallel to the ground a cutting is made with an axe at the side of the tree to the depth of 6 or 8 inches, and a horizontal shelf of which this forms the bottom is then made by chopping out a wedge-shaped piece about 10 inches high at the outside. In the shelf a "pocket" is scooped capable of containing a quart or two, and the gum is made to collect in it by scarifying the bark triangularly, with an angle pointing to the pocket. On large trees as many as three and even four of these cuttings are sometimes made, it being found that a strip of bark 3 inches wide between them will keep the tree alive. Each successive year more and more of the bark has to be removed, but even thus a tree lasts usually from fifteen to twenty years. When the "pocket" has become full, the gum is barrelled and carried away to be distilled. The turpentine continues of uniform quality throughout the life of a tree, but the resin, which is the residuum after distillation, rapidly deteriorates. The first year's resin is far the best, and is known as "pale" or "window glass." The second and third years' is known as "yellow dip." Common or dark resin is the product of trees worked four years or more. The work of tending the trees is done entirely by negroes, one negro taking charge of "a crop"—that is of 10,000 "pockets"—for which the wages since the war have usually been from 15 dollars to 20 dollars a month, without board. This year wages have been as high as 25 dollars to 30 dollars. "A crop" is estimated to yield about 200 barrels of crude turpentine in a season. The rent of a "crop" varies from 150 dollars to 200 dollars. The negroes prefer working in the turpentine woods to any kind of agricultural labour, as the work is better paid, and is more agreeable in itself. One consequence of this is that there is a great scarcity of field hands in the central counties of the State.

Shelter.—By thick planting trees keep each other warm; hardly any protection can equal the multitudinous leaves and branchlets of trees. The wind strikes a brick or stone wall, and tumbles as it were headlong over it, and goes off on a different tack perhaps, but with almost as much force as before; it enters one side of a belt or clump of trees like a lion, and is tamed down to lamb-like gentleness before it reaches the other side. Therefore, shelter choice trees and shrubs with more common ones on their exposed side, and plant thickly at all points, so that each plant may shelter its neighbour.—F.

THE LIBRARY.

LIFE AND LABOURS OF MR. BRASSEY.*

ALTHOUGH our usual practice is to review only such works as have some bearing on horticulture, we are tempted to depart from our plan in briefly noticing the present volume, for the sake of the lesson which it teaches in the results achieved by energy, perseverance, and integrity. The history of Mr. Brassey's career will be welcomed as one more record of the triumph of those qualities, for the possession of which by so many of her sons Britain has reason to be both proud and grateful. We must, however, confess to a feeling of disappointment that the author has not given us fuller details of Mr. Brassey's private life, and that the book is rather an enumeration of contracts than a biography. We should like to have known more of Mr. Brassey apart from his every-day work. In this respect the information given is exceedingly meagre and unsatisfactory. It is not sufficient to be told that he was "a singularly trustful, generous, large-hearted, dexterous, ruling kind of personage; blessed with a felicitous temperament for bearing the responsibility of great affairs." This is conceived and written in the spirit of an epitaph, and while it leaves a great deal to the imagination, it gives us no insight whatever into the individuality of the man. After reading all that the author has written of him, we do not feel that we have made Mr. Brassey's full acquaintance. The continual obtrusion of his own opinions by the author, his amusingly magisterial tone on such occasions, and the somewhat offensive air of patronage which he assumes throughout the work, might have been dispensed with to great advantage; still, notwithstanding these blemishes, we have no doubt that his chronicle of the labours of Mr. Brassey will be read with much interest. Among the incidental notices of persons who were professionally connected with Mr. Brassey, we were much pleased with the short sketch of the career of Mr. Stephen Ballard, who, from small beginnings as a working gardener, became one of Mr. Brassey's chief agents and coadjutors. The account given in chap. viii. of the ingenious yet simple manner in which this gentleman solved the difficult problem of carrying the Great Northern line of railway through the Fen country, over a quaking bog 22 feet deep, and three miles in extent, is most instructive, as showing how largely an intelligent and observant man may avail himself of Nature's own resources, in overcoming apparently insurmountable natural obstacles. We should be happy to quote an extract, but want of space compels us to refer our readers to the work itself.

THE "IDSTONE" PAPERS.†

THESE humorous essays from the pen of the well-known "Idstone," of the *Field*, almost wholly devoted to sporting subjects, form very pleasant reading, and occasionally touch upon a subject likely to interest our readers, as in the clever essay on the agricultural labourer, from which we give a few passages as samples of the author's style:—

I have lived amongst the labouring classes the greater part of my life. How many years? you say. Well, never mind. During that quarter of a century, more or less, I have frequently acted as their medical adviser, their lawyer, their mediator, and their severe Mentor—the last not often; I don't like it. In the matter of medicine, if I have done no good I have done little harm, for I use the simplest drugs. I accept as gospel all I read in the "Domestic Medicine," lately published, or in self-evident cases I am guided by the wisdom of a shilling book, which, when I bought my medicine chest, was given in—almanack and all. The only danger is when I am compelled to, "exhibit" powders, for I am not very clear about the weights; and as the children have, in former days, made toys of the scales, they are a drachm or two out of square. Yet, as a physician, I am popular; and one of my patients, who had eaten too much at a club banquet, paid me the highest compliment (after recovery), saying that, "true enough, my doctoring was like hedge carpentering—not neat-like, but everlasting strong." . . . I had a difficult case some time ago—not the first by several. It was what is here called "hag-rod" (hag-rodde), or nightmare. The patient was one of the very ugliest ploughboys I ever saw, and about fifteen or sixteen years old. They told me he was "dying," and, although the messenger had taken her time in coming for me, she desired me to lose no time in going to see her lodger, adding, in a whining voice, "It warn't his body, but his 'sperrit'; and that after supper, when he went to bed, 'the devil played the very wag with un.'"

* "Life and Labours of Mr. Brassey," by Arthur Helps. Second edition. Bell and Daldy: London, 1872.

† "The 'Idstone' Papers," a Series of Articles and Desultory Observations on Sport and Things in General. By "Idstone," of the *Field*. London: Horace Cox, 348, Strand, W.C. 1872.

. . . They look upon the neighbouring magistrate as the embodiment of English law, and are rather fond of "pulling each other up." These quarrels are of a strictly parliamentary kind, nevertheless, and I have frequently seen the plaintiff take the defendant in his cart to a court of justice, and as often bring him back again, or *vice versa*; whilst the animosity, the swearing, and the conviction, all are buried at the nearest public-house. My legal experience is confined for the most part to the making of wills (agreements or other documents we use none). The few who happen to have a score or two of pounds lend it at "use" or interest without any other than a verbal agreement, and often with no security at all. Generally unforgiving with regard to *assaults*, they are very lax in money matters, and pretty easily defrauded, except the recovery of the sum, or part of it, can be managed for them by the interference of a magistrate. Unless you make a will for them, they are certain to break down, and they have a weakness for letting the testator "sign it," and taking it into other houses for the separate and independent signature of two witnesses as required, generally selecting the man's eldest son, who will be benefited, and a lad of twelve or fourteen years old. I once detected much such a case as this, where the will was, of course, no better than waste paper.

GARDEN DESIGN.

THE ERRORS OF PARALLELISM AND OF UNBROKEN LINES IN LANDSCAPE GARDENING.

NOTHING is more common than to see the picturesque effects of a planted or a painted picture spoiled by parallel lines thoughtlessly and unartistically introduced in unsuitable situations. They are frequently the result of accident, and in such cases are a sign that the artistic element was not sufficiently active in the designer. In the works of inferior landscape painters a ridge of undulating white cloud is often seen just above the top of a line of dark trees, running in the same direction and following every sinuosity of the tops of the trees. The artist himself, very possibly, perceives that there is an unnatural kind of effect in his picture, but scarcely knows how it is produced; he lightens his trees and darkens his clouds, to remedy the, to him, mysterious defect, or perhaps makes the trees still darker and the clouds still lighter; but never perceives that the defect lies in the infelicitous parallelism of two lines, such as in nature could scarcely ever occur, and which, if it did, would be the very thing not to copy. This principle is well illustrated in the annexed engraving, in which a walk is shown running in a precisely parallel curve to that of the water, and also of the strips of grass on either side of it. An effect so like the parallel streaks of black and white in an onyx is very fatal to the natural and picturesque effect of an artificial landscape, and is one that would be carefully guarded against by every true artist. It may be urged that a walk at the side of a piece of water cannot very well be treated otherwise; and that, as it is pleasant to stroll by the water-side, the most natural thing in the world for the planner of the scene to do is to make the walk follow all the curves of the water line. But this need not be so, and it is easy to point out in the present example that the effect might be rendered very much more agreeable, by making the walk diverge from the water line, for a short distance, in the direction of the grove of Fir trees, while at the point of the inward branching, there should be a thick clump of shrubs or some other object, appearing to be the cause of the divergence, and at the same time breaking the continuity of the line, and giving value to the reappearance of the walk after its momentary concealment. Parallelism is one of the poorest devices of the infancy of art. It is one of those violent and vulgar divergences from nature which, though it exhibits the hand of art, the art is such as scarcely deserves the name, though it may sometimes please those who have no opportunity of studying horticultural work from a loftier point of view.

The value of an object serving to break a long, continuous line is incalculable in garden landscape. For instance, in the foreground of our illustration the water line forms a curve that runs in a precisely parallel direction to that of the opposite shore. It is a curve not even pleasing in itself, and would be positively offensive in the picture but for being accidentally broken by a casual group of figures, which mitigates its

poverty and unpleasantness. The proprietor of such a scene might take a valuable hint from the effect produced by that group of visitors to his grounds—call his gardener to his side, and give him, *sotto voce*, directions to plant a group of shrubs on that very spot, at the first planting season, making the group somewhat more important in point of bulk, and of course more irregular in form, and having, in parts, greater height, though that might not, perhaps, be actually necessary. Yet, as the land appears to be lower, and consequently moister on this side, a Willow might be introduced with good effect, as shown in the little sketch below.

An object of that kind from certain points of view, in such a composition, breaks not only the line of the near shore, but also that of the opposite side of the lake or stream, and is almost always

productive of a good effect, as it cannot fail to give great variety to the effects of the entire scene. Its tones, being near the eye, will come out brightly and strongly from those of the trees on the opposite shore, which are modified to soft greyish hues by the distance; an effect which is the very soul of landscape painting, and which produces analogous effects in a landscape made of real trees and turf and water, instead of different coloured pigments. This little engraving may serve to suggest another point in landscape gardening. It is just possible that the landscape gardener who devised our larger example, actually cut down just such a Willow as the one here shown, and carted it away along with the picturesque old Alder to the left of this pretty little example, in order to make way for the ugly sweep of his clumsy curve, and to give him more room for his grand invention of a wider expanse of naked turf. This supposition is not only possible, but exceedingly probable, for it is a very usual course of proceeding with some of the unskilled planners, who are injudiciously entrusted with the laying-out of grounds, to cut down and clear away all the old trees of the place, in order to give themselves freer scope for their flights of genius in the marshalling of their young three years old Laurel, Privet, Spruce, Laurustinus, and other things of the kind, with some nice "young stuff" in the way of Limes and purple Beeches; without once considering how grandly valuable would have been the old trees, even if not very noble specimens, if each one had been used as a nucleus, round which to group the new plantations, to which they would serve to give that height and importance at once, which, without them, the young trees would be several years in attaining.

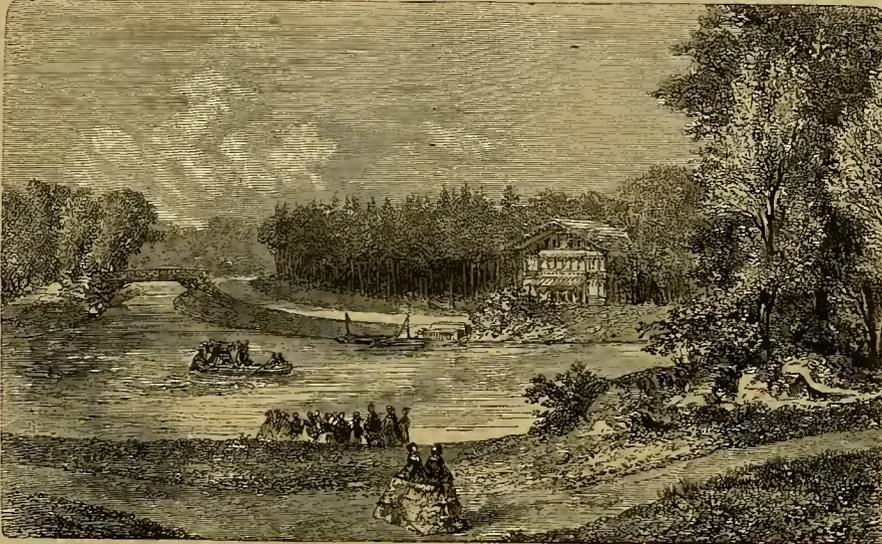
H. N. H.

THE FRUIT GARDEN.

PACKING FRUIT FOR MARKET.

ONE who watches the markets cannot fail to observe that a large amount of fruit reaches its destination, if not in bad order, at least far enough from perfect condition to miss those

customers who are always ready to pay the highest rates for a first-class article, but who would be unwilling to accept a poor one as a gift. With Apples the improvement in this respect has been quite conspicuous within the last few years, and growers who once practise the better methods of packing are not likely to go back to the old careless ones, for it soon becomes apparent that to do so would be certain to deprive them of the highest profits



Unbroken Water Margin.

as well as of a ready market. With Apples, a great deal of this recent improvement has been brought about through the agency of middlemen, who go among the growers and contract for the crop, in many cases furnishing barrels and superintending the picking, sorting, and packing. These men know that no matter how fine the bulk of the fruit may be, a peck of indifferent specimens in a case will spoil the sale, or at best take a dollar or two from the price. Attention to a few small but important points will be the cause of one orchardist's ultimate success in getting high rates, and establishing a name, while a careless neighbour, who raises just as fine fruit, will receive from his commission dealer discouraging returns. This is true, not only of Apples, but of all kinds of fruit. With Apples it is a safe rule never to place choice fruit in a soiled case; better pay a little more and get a perfectly fresh barrel instead of buying one from which flour has been taken. The usual Apple barrel will only hold two and a quarter bushels; when headed, while the flour barrel will hold two and three-quarter bushels, good measure. If for no other reason than size, the grower should give preference to the former. First-quality Apples should always be hand-picked, and then sorted, so that all the specimens in the same case will be as near



Nature's Water Margin.

as possible of a size. The man who packs poor fruit in the middle, with intent to deceive, does a thing which is as unprofitable as it is dishonest, and he is the only person who will suffer by the trick, as those who buy fruit will empty the packages and detect the fraud. Another and equally important point is to keep each variety by itself. Two or more kinds in the same barrel will injure the sale of the lot.

In packing, the empty barrel should be turned upside down and the bottom taken out. Then begin by putting a tier of

Apples, all in the same position, stem end next to the inside of the lid. A second tier follows, and then the remainder are carefully laid in by hand, and shaken down every now and then to settle the fruit. When the barrel is filled a little above the groove, the bottom is pressed into its place, the hoops driven down, and nailed. The barrel is then turned top up, and the name of the variety marked on the lid, and the trade mark of the grower. It is then ready for shipping, and when the commission merchant opens it every specimen will be in the position in which it was placed, and will at once attract the attention of the buyer, and when it is found that the fruit is all of a size there will be no trouble to find a customer who will give the highest market rates. It would pay any grower who packs many Apples to make an apparatus for forcing the bottoms into their places, by means of a wooden screw. A man can construct one in an hour, provided he can get a screw such as is used on a carpenter's bench. The machine consists of a flat bottom piece and two side pieces fastened together, the uprights wide enough apart to admit a barrel between them. The top piece is heavier, and mortised to the sides, some 18 inches higher than the barrel. In the middle of this top piece the wooden screw is set. On the lower end of this screw there is fastened a wooden shoe the same shape, but not quite so large as the barrel head. When the barrel is ready for heading it is placed in this apparatus, and the lid or bottom put in position. The screw is then turned down, and the bottom is forced into its place without any hammering, and in half the time usually required.

What has been said about gathering, sorting, and packing Apples, is equally applicable to Pears, but of Pears a much larger proportion of the whole crop comes to market in bad order. In fact, it forms the exception to find a large lot of Pears well packed. A considerable portion of this kind of fruit is bought at low prices, taken on lofts, repacked, and then resold at higher rates. During the Pear season, this is a lucrative part of the business, and a part that can be carried on with little capital.

For Pears, three styles of packages are popular in the Eastern markets. The first is the ordinary Apple barrel, which answers very well when the fruit is not too ripe, and for shipping long distances. When carefully packed in these, the fruit travels in good order. It must, however, be closely put up, so that it will not toss about, and become bruised. The most popular package, all things considered, is a well-made and well-proportioned half-barrel. As a rule, Pears will sell more freely, and at higher figures, when packed in half-barrels, than in any other way. This makes a handy bulk to lift on or off a waggon, and the quantity is just about sufficient for the small fruit dealer who retails; for a hotel keeper, and frequently for a private family. These half-barrels should be packed in the same way as directed for Apples, with the exception that Pears should be placed on their sides instead of on the large end in putting the first tier. As few stems as possible should be broken off in handling. To have Pears with all the stems on will be decidedly an advantage in selling, as buyers are always willing to pay more for such fruit.

The next style of package is a wooden box nearly square, that holds just a bushel. The sides and bottom are made tight, and the top has laths nailed on it, leaving openings of about an inch between. These top strips are easily forced open, in putting in or taking out the Pears. With growers who live within a convenient distance of the market, these boxes answer very well, and are less expensive than half-barrels. The half-barrels are never returned, while the boxes are, and the same set may be used for two or three seasons when they are carefully kept in a loft or other clean, dry place. The only cost is in the first outlay, and this is very moderate, compared with half-barrels. Baskets are sometimes used, but mostly for local trade. When sent long distances they are likely to be opened and the fruit taken out, before reaching the market, thereby spoiling the sale of what is left. In handling Pears, more care is needed than with Apples. Rough handling will cause them to rot before ripening. Above all, keep the varieties carefully separated.

[The culture of Pears and Apples is carried on on such a vast scale in America, and the practice of sending large quantities

of fruit for long distances, now frequently to this country, is so common that a knowledge of what is considered the best system of packing there may not be without importance to our fruit-growing readers. The above is from an experienced fruit-grower, and correspondent of the *Tribune*.]

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Scarcity of Apples and Holly Berries.—I have noticed for many years past that when we have a good crop of Apples, we always have plenty of Holly berries, and vice versa: this year forms no exception—both are scarce.—R. GILBERT, *Burghley*.

Want of Flavour in Pears.—I find that our best Pears this season, such as *Passe Colmar*, *Winter Nelis*, and others, lack that fine aroma so much enjoyed by connoisseurs; in fact they are only second-rate, a circumstance to be attributed, I should suppose, to the wet ungenial weather which we experienced during the summer.—R. GILBERT, *Burghley*.

Outdoor Grapes in Italy.—In answer to "P. P.'s" enquiry respecting how to curb the over-luxuriance of his French Chasselas Vines, and induce them to produce fruit, I beg to say that this variety grows excellently in the light chalky soil of Fontainebleau, near Paris; I am, therefore, of opinion that "P. P." would make his Vines fruitful by trying the following mode of cultivation.—The Vines ought to be lifted as soon as their foliage is changing colour in the autumn, and all the strong roots should be well pruned and shortened. The old soil, if strong, must be taken away, and the bottom of the border concreted with old lime rubbish, broken stones or bricks, or any materials which will form a hard bed and prevent the roots from entering the subsoil. The drainage ought likewise to be made as perfect as possible; but in the warm climate of Italy this may not be required so much. Replant in a light turfy soil, if of a calcareous nature all the better, and I have no doubt but that good Grapes will be produced the first year of planting.—WILLIAM TILLEY.

NEWSTEAD, WIMBLEDON.

It has often been represented to us that descriptions, plans, and views of good examples of the smaller class of gardens would be more useful to the majority of our readers than those of great ones, which only millionaires can hope to rival. Another reason for paying attention to such gardens is that they are often better laid out than the large gardens, which, indeed, rarely depend for their attractions on any beauty of design. Influenced by these considerations, we have had plans and views taken of some of the best laid-out gardens near London—probably the best laid-out that exist, and to-day we introduce to our readers a plan and views of Mr. John Murray's interesting garden at Wimbledon. The views and plan give so good an idea of the place that little need be said about it. Its chief charm is derived from a rich collection of healthy young coniferous trees and shrubs, of which Mr. Murray is a great lover. Many of these are fine specimens, and the effects they produce at all seasons very beautiful. The following is a statement of the size and age of some of the finer specimens, as measured last Friday week:—

	Height.	Circumference of stem.	Date of Planting.
Deodar Cedar	36 ft. 33 ft.	30 ft. ...	1852
Taxodium sempervivens ..	37 ft. ...	... ..	"
*Picea Pinsapo	25 ft. ...	21 in. ...	"
*P. nobilis	29 ft. ...	30 in. ...	"
Wellingtonia	26 ft. ...	36 in. ...	about 1858
P. cephalonica	31 ft. ...	33 in. ...	"
Araucaria imbricata	27½ ft. (round headed). 35 in. high when planted in 1854		
*Araucaria imbricata	27 ft. stiff branched. 31 in. about		"

Mr. Murray has, in comparatively few years, converted a bare piece of heath land into the charming garden our illustrations now show it to be. The small geometrical flower-garden has a fine specimen *Araucaria* in the centre of each division, and is surrounded by plantations of choice American plants, backed by Conifers, which are abundantly planted in most parts of the garden. American plants are also planted freely near the outer walks, so that, in early summer, at all events, the rich pyramids of green formed by the Coniferous plants are relieved by a profuse and showy bloom on the shrubs, and beneath and around these there is plenty of room for those humbler flowers which add a charm to gardens of every type. As regards design, the garden is shortly to undergo some modification at the hands of Mr. Marcock, which will, no doubt, tend much to its improvement, particularly as regards breadth.

* These are represented by woodcuts on pp. 489, 491, and 494.



PLAN OF MR. MURRAY'S GARDEN, NEWSTEAD, WIDDLEDON.

RECOLLECTIONS OF JOHN CLAUDIUS LOUDON.*

BY NOEL HUMPHREYS.

(Continued from p. 48.)

BEFORE proceeding to describe his practical experiments on General Stratton's estate in Oxfordshire, it will be desirable to examine the contents, and assess the merits of the works which had so strongly arrested the public attention, and led General Stratton to make their author a most generous proposition for the farming of his estate on the Scotch system—a proposition which eventually resulted in the realization of great advantages, not only to the farmer, but also to the landlord.

Any ordinary, practical farmer who might have been induced, contrary to the advice of his "best friends," to purchase Mr. Loudon's expensive works on "the formation and management of useful and ornamental plantations," or his treatise on "the formation and management of country residences," and his work entitled "An Immediate and Effectual Mode of Immediately Raising the Rental of the Landed Property of England," would have been very likely to throw the works aside with the scornful contempt of what is considered our chief national characteristic—our "strong common sense!" The idealistic and picturesque manner, often bordering on the poetical, with which Loudon expresses his love of nature; and his unbounded faith in the beneficent luxuriance with which she crowns human efforts when made according to philosophical principles, combined with persevering labour, would necessarily strike the conservative in such matters as savouring far too strongly of the Utopian strain, to be the feelings of a man having any good, practical lesson to teach. But the receipt put forward in the title-page of the last-named work, "an immediate and effectual mode of raising the rental of the landed property of England," was metal too tempting, notwithstanding its Utopian ring, to be entirely disregarded; and General Stratton, among other landowners, was not only captivated by the attractive words of the title-page, but also convinced by the theories set forth in the body of the work.

It will be instructive to examine these works in some detail, and so obtain a better knowledge of the really practical nature of Loudon's theories, which, though so strongly blended with the finer feelings and the more deeply philosophical views which look far beyond, towards still greater advances, were, nevertheless, abundantly applicable to the exigences of the time. His treatise on forming and managing country residences, which, as I have before stated, was published in 1806, opens with the somewhat paradoxical observation that "Landscape gardening" is an unmeaning term; and that "Landscape husbandry" would be far better. This ingenious objection to a long-accepted term shows the thoroughness with which Loudon sifted every subject he was about to treat of, even to its name; and his determination to cast off the shackles of precedent to the very last link, and go into the subject entirely on its abstract merits, as investigated by himself. This little feud with the name given to his favourite art by his predecessors was scarcely a tenable one; and is partly abandoned, even by himself, when he immediately afterwards admits that the formation of picturesque pieces of water, or garden buildings, could not very well be included in the term "landscape husbandry." He next analyses the meaning of the term "picturesque" in its reference to landscape, and assigns to it two distinct meanings. In the first, he tells us that it refers to a kind of natural beauty distinguished by ruggedness, abruptness, and irregularity, either of form or colour. Its secondary meaning he defines as having reference to such objects "as are calculated to produce a good effect when painted." He then proposes the term "Picturesque improvement" in place of "Landscape gardening." These are perhaps somewhat fanciful definitions, but it would be injudicious to quarrel with even his most fastidious distinctions of terms, as such investigations have their value, and the precise meaning of even unimportant terms are of great use to students, in leading them, through an interesting disquisition on the value and meanings of technical nomenclature, to the

appreciation of the principles they are intended to define; and in this way the works of Loudon are always so instructive.

He considers rightly that picturesque gardening is, in so far as Europe is concerned, a strictly English invention, first put in actual practice after a crude manner by Kent, in his designs for the gardens at Esher. The leading principle of picturesque improvement, he tells us, is "unity of design and character in regard to the whole," urging that "whatever does not assist the leading idea weakens it." These axiomatic assertions, so emphatically put forward by Loudon, are absolutely true, under all circumstances, and must ever form the basis of every well-considered horticultural design. There *must* be a leading idea in every artistic composition, he repeats, and then proceeds to illustrate his theorem by the comparison of a human being who is uniformly clever, or uniformly good, to one who has some striking characteristic; remarking that even men, like scenes in nature or in pictures, are soon forgotten if they present no salient point of interest, which rises strikingly above the level of their pervading qualities. From this predominant feature, the central point of attraction, all the subordinate parts of a composition must, he asserts, be made subservient, and yet be harmoniously and closely allied with it. "Connection," he tells us, "is found everywhere in nature," and where it is not found in a production of art, that work is necessarily defective. In the creation of scenery by the means of horticultural art, wherever there is want of connection, we are told, "the scenes are faulty and ineffective. Few of those who follow the profession of laying out grounds," says our author, "appear to feel the importance of this principle," or to make their so-called improvements accord with the special character of the scene they are dealing with, and with which they fail to bring them into "connection." Most of our "improvers" do not, however, need the knowledge of such principles (says Loudon), as they would not be benefited by them, for, as Mr. Price satirically observes (continues our author), "Mr. Brown has so fixed and determined the forms and lines of clumps, belts, and serpentine canals, and has been so steadily imitated by his followers, that had these improvers been incorporated, their common seal, bearing a clump, a belt, and a piece of made water, would have fully expressed the whole of their science, and have served for a model as well as a seal." In this very complete treatise, the principles which I have so superficially analysed, and which are very far in advance of the general horticultural knowledge and practice of the time, we soon find our enthusiastic young author rhapsodising again, but yet rhapsodising to the purpose. "Rural scenery," he exclaims, "is congenial to the human mind!"—illustrating his assertion by the remark, "How few are there among those entirely engaged in town pursuits who do not look forward full of the hope of some day retiring into the country." No author's character is seen more completely in his works than Loudon's, who is continually, while imparting instruction, giving us unawares a description of the character and progress of his own mind. To read his works in chronological order is like reading the history of the man, whose character we see continuously broadened, softened, and improved by his intense love of the never-cloying beauties of Nature. He tells us that "works of art, especially of high art, require a special education and much observation before their merits can be fully appreciated; but men have only to see Nature, to love and admire," exclaiming, "Who has not felt the varied effects of the seasons, or even the no less amazing changes of a single day?" Bacon felt all this when he said that "God planted the first garden."

Loudon freely confesses that he esteems very lightly Kent's attempt at landscape gardening at Esher, and asserts that the principles there imperfectly shadowed forth were far more worthily applied by Mr. Price, of Foxley, and Mr. Knight, of Downton; one of them the author of an essay on the picturesque, and the other of a didactic poem, entitled "The Landscape." It has been asserted that Loudon's works were almost entirely compilations; but this is untrue. His Encyclopædias were, of course, in great part either compilations, or the work of eminent collaborators, whose assistance is always duly acknowledged. In works of that kind it could not be otherwise; but in such essays and books of

* We resume, with great pleasure, the "Recollections of John Claudius Loudon," by Mr. Noel Humphreys, which has been unavoidably interrupted by the absence of the author.

instruction as those under description, and he published many such, he was in every sense a strictly original author. The ideas and theories expressed in them were entirely his own, and almost always very far in advance of those of any other writer on the subject. His original definitions of the terms "taste," "sublimity," "beauty," "deformity," "picturesque beauty," "sculpturesque beauty," "romantic beauty," "wildness," and many others likely to occur in writing of the higher branches of horticulture, are in many instances strikingly apt, and always interesting and instructive. He strongly advises the study of landscape painting by all wishing to take high rank as landscape gardeners; one of the great advantages of which study, he says, is to analyse the methods upon which the landscapes of the great masters are composed, and in the analysis of the art of landscape composition in painting, learn the art of composition in real scenery.

In the midst of a variety of interesting matter, profusely illustrated with engravings, which are very excellent for the period, he narrates a conversation which he had with Sir John Maxwell Heron, on the subject of such trees as are most valuable for planting on account of their timber or other qualities, with a view, in extensive plantations, to combine the useful with the ornamental. The peculiarly durable quality of Larch-wood being spoken of, Sir John related how some doors made of it, and left unpainted, soon began to exude a substance which covered the whole of their surface, and even filled the joints so completely that they presented the appearance of a brown mass composed of a single piece of wood or some other substance; a fact worthy of more careful investigation. Its characters of not splintering, and of resistance to fire were also alluded to, which seemed to render it peculiarly fitted for ship-building; and Loudon immediately suggested methods of forcing it to grow in those curved forms which would render it applicable to shipbuilding purposes, as its comparatively small size precluded the possibility of sawing the desired forms out of the bulk, as in timbers of a larger growth. This ingeniously conceived process, which he illustrates in a curious plate, was to be effected, during the growth of the tree, by forcing it into the curve required either by tying down or tying up with strong iron wire, to give it the required direction—a result which, as he told me long afterwards, he had often produced by way of amusement. If this ingenious device be of no use in a commercial point of view, it is certainly a valuable hint for forcing certain trees to grow in an irregular and picturesque manner, where it would be desirable for them to do so in garden or landscape scenery; the straight growth of the Larch, when deviated from naturally, as is frequently the case, being often productive of a pleasing and picturesque variety of lines, greatly adding to the ordinary variety of the more usual tree forms. This volume also contains some very valuable hints on planting detached forest trees and orchards, and I must not conclude my very superficial analysis without remarking that Loudon's excessively strong love of order and classification, which sometimes acted injuriously on the freedom of his designs, led him to urge, in the latter pages of this work, even in a small place, the formation of a botanic garden, with representatives of all the leading classes of plants, regularly arranged according to

the system of Jussieu or that of Linnæus. In an appendix to the work he introduced some excellent remarks upon Mr. Repton's method of showing the effect of improvement by means of "slides;" on which principle, Mr. Repton first represented the original state of the park or garden, and then contrived a paper slide, which, passing over the representation of the scene as it was, so as to cover it either entirely or partially, showed the effect of the intended improvement in a convenient and striking manner. The thirty-two engravings by which the work is illustrated are some of them highly finished engravings from Loudon's own drawings and paintings, as before stated, the best of which were afterwards republished in a separate form, with a short description to each subject.

In the following year he published his "Immediate and Effectual Mode of Raising Rentals," principally founded upon his own experiences, which proved pretty clearly that if a dreamer, his dreams were nevertheless of a very practical nature; and if a madman, as still stronger opponents averred, there was most certainly "a method in his madness," of a very profitable kind. The Wood Hall Farm, which he had induced

his father to take, consisted of 350 acres, then let at only 13s. an acre. The tenant wishing to leave, Mr. Loudon proposed that he should at once be compensated for the remaining interest in his LEASE, which the landlord agreed to do, by a payment of £1,500; Mr. Loudon, sen., agreeing to take it on lease at the greatly increased rent of £2 an acre. This transaction occurred in 1806, and was the means of raising the rental at once from £197 10s. to £700! What confidence these enterprising Scotchmen must have felt in their system, their judgment, and their industry. Well might young Loudon, who then resided with his father at Wood Hall, and who soon found that, even at this greatly increased rent, large profits might be made, hasten to publish in the following year (1807), his "Immediate and Effectual Mode of Raising the Rentals of Landed Property." Under the management of Mr. Loudon and his son, John Claudius, the form of all the enclosures of Wood Hall were almost entirely changed; being made more regular, both as to the shape and the size of the various fields.



Arancaria in Mr. Murray's Garden.

Old and useless hedges, often measuring from 10 to 20 feet in width, including waste, were rooted up, and the accumulation of rotten rubbish and leaf-mould being collected and spread over the land manured upwards of ten acres almost as effectually as could have been done with stable manure. In one place on the farm, an entire acre was rendered useless by an indrain of water from a higher field; and this was rectified by a general system of drainage. The straightened hedgerows made ploughing more easy, with far less waste; while in the rectification of the fences, the number of gates was reduced by more than one-third, the whole being rendered more open and healthful, while nearly fifty acres were rendered productive which formerly had been lost. By leaving the best of the hedgerow trees and removing useless fences, the whole farm assumed almost a park-like appearance, which he always aimed at in his farming experiments; and the place is still remarkable, at the present day, for its fine detached trees, especially a noble Oak, which was struck by lightning some few years ago, and is now a picturesque ruin. No details of usefulness were omitted in the general remodelling, the old straggling

farm-buildings being improved in plan, and nearly all rebuilt: the house, the gardens, and orchard undergoing a similar overhauling. Mr. Loudon, sen., also took on a similar lease to that of Wood Hall, a farm of 230 acres, at Kenton, about two miles from Wood Hall. It had been for some years occupied by a tenant-at-will, at 13s. an acre, which appears to have been about the usual rental of land in that neighbourhood. Under the system of tenancy-at-will, the land had become seriously impoverished, and, in fact, utterly exhausted; yet Mr. Loudon at once made an offer of £2 per acre, and, protected by a long lease, did not shrink from making such costly improvements as, with vast energy, good management, and indomitable perseverance, got the whole farm into tolerable heart, in the course of a single season, similar improvements to those effected at Wood Hall having been carried out in that short time.

The elder London did not live to see and enjoy the fruits of his energetic labour and enterprise. His strength began to fail very soon after his arrival at Wood Hall, in Michaelmas 1807; and he continued in a state of health which caused the greatest anxiety to his family till the month of February, 1809, when he died. He was buried in Pinner churchyard, to the south of the fine old grey tower of the parish church. His son, John Claudius, the subject of the present memoir, erected a handsome and remarkably picturesque tomb over the grave, which, partially covered with a great plume-like mass of sombre Ivy as it now is, forms a very striking object, which attracts the attention of all who pass up the steep road at the side of the churchyard, leading to Kenton and Harrow. The present incumbent of the perpetual curacy of Pinnercum-Harrow had, however, a short time since, very serious thoughts of causing it to be taken down, as a disfigurement to the churchyard, which, after the establishment of a parochial cemetery at some distance from the church, he wished to have cleared of all tombstones and monuments, in order to level it and plant it with ornamental shrubs. The desecration, however, of pulling down the Loudon tomb was prevented by the earnest representations of friends of the family. The good clergyman had probably never heard of the name of Loudon, nor of his works, or most likely it would never have occurred to him to destroy a memorial which is often visited with so much interest by admirers of the genius of our great horticulturist, and who also admire the warm filial attachment which prompted the erection of the interesting memorial, which now bears the name of Mr. Loudon's mother also, who outlived her husband many years. I visited the spot this summer (1872), and I am happy to be able to state that there is no longer any danger of the memorial being destroyed. Mrs. Loudon resided for some time (as I have been informed) at Kenton farm, after the death of her husband, with her daughters Mary and Jane, and probably her son James, who about that time or shortly afterwards went to the continent, and eventually settled in Poland, where he succeeded in establishing an extensive brewery on the English system with great advantage, in consequence of the low price of Barley, there being no means of exporting the abundant grain crops of that fine corn-growing country, and all kinds of grain being consequently purchasable at prices that appeared merely nominal in comparison with the rates at which Wheat, Barley, or Oats, commanded in England at that time.

(To be continued.)

Tea in the Caucasus.—The St. Petersburg correspondent of the *Manchester Guardian* says:—"Letters from the Caucasus report that the attempted cultivation of tea at Soukhonm Kaleh (a port on the eastern shore of the Black Sea, a little to the north of Poti) is a decided success. Many of the plants have not merely survived the winter without any apparent injury, but have actually attained a height comparatively rare even in China. The Caucasus is thus developing simultaneously three new branches of industry—the growing of tobacco, the making of cheese, and the cultivation of tea; and should any one of the three prove as successful as it is expected to do, it will undoubtedly open up a source of very considerable profit."

Owing to the scarcity of vegetables and the abundance of diamonds in Arizona, the miners are now swapping with the farmers even, carat for carrot.

THE MARKET GARDEN.

PARIS MARKET VEGETABLES AND THEIR CULTURE.

BY A PARIS MARKET GARDENER.

(Continued from p. 372.)

ORACH.

THE seed of this is sown every month from March to September in spaces between other crops. It should be sown thinly, or if sown too thickly, it should be well thinned. Water moderately and only in dry weather. The leaves are gathered and eaten boiled like Spinach, or mixed with Sorrel, to soften their acidity. There are two varieties, the white and the red. The seed should be gathered before falling, from the finest plants, reserved for this purpose; it should be dried in a shady place, sheltered from the wind, as it is very light. It does not retain its germinating power for more than a year.

FRENCH ARTICHOKE.

This plant is best propagated by means of offsets or suckers in March or April. The suckers should be detached so as to have as much root as possible, and the ends of their leaves should be cut off. The beds intended to receive them should be deeply dug, and, above all, well manured, after which drills or furrows are to be made in them at intervals of 32 inches. In these drills the suckers are to be planted quincunx-fashion 28 inches or 32 inches apart. Each sucker should be put in with the hand, the roots should be well spread out, and the soil firmly pressed around them. The Artichoke occupies a good deal of room and grows slowly; therefore the wide spaces between the plants should be utilised by planting Milan Cabbages or white Onions in them; Radishes or Lettuces may also be sown there; in any case these sowings and inter-plantings should not occupy the ground long. A plantation of Artichokes should last for three or four years. A fresh planting should be made every year, the produce of which is gathered in autumn after that of the old plants. When frost is approaching, the longest leaves should be removed, the soil should be heaped up around the plants, and over it a layer of dry manure. In large plantations the soil is heaped up about the plants with the plough, and then covered with leaves, over which a layer of soil is placed to prevent them from being scattered by the wind. In March the plants are uncovered, the suckers for fresh planting removed, and the manure which was used as a covering is dug in. This protection is not necessary in milder climates. Artichoke seed keeps good for five years; it is seldom gathered, as the suckers suffice for propagation. The seed plants should be grown in the full sun, and sheltered from north winds. The unexpanded flower is what is sold for the table, the spiny sepals of the calyx and the disk of the flower form what are called the head or heart of the Artichoke. The few market gardeners who grow Artichokes among their early crops obtain the first produce for market in April by covering the old plants with frames and surrounding them with warm manure. The ordinary crop comes in in May and June, and that yielded by the young plants in the beginning of autumn.

ASPARAGUS.

In market gardens Asparagus is grown either in the squares or in beds prepared for frames. The seed is sown in March, and the seedlings are transplanted at a distance of 3 or 4 inches from each other. The ground should have been previously well manured. For three years Radishes and Spinach may be grown between the plants; Cabbage Lettuce, and Roman Lettuce, Cauliflowers, and Cabbages are planted in the alleys, and the waterings given to these plants are beneficial to the Asparagus plants also. The seed should be removed early, as it weakens the plant if allowed to remain. At the end of September or beginning of October the stems should be cut off close to the ground, and fresh soil supplied to the bed. If not forced to yield earlier, a crop may be gathered in the spring of the third year. When it is required to force Asparagus, frames of a special shape are placed, in the third year, on the beds, and covered with a good layer of soil or spent manure. This is done in the beginning of November. The walks are cleared out to the depth of 2 feet, and the soil

is cast on the spent manure so as to half fill the frames. The cavity in the walks is then filled with manure well mixed and trodden down to the level of the lights of the frame. During the entire period of culture, this manure should be stirred up with a fork every twelve or fifteen days, and a small quantity of warm manure added. No air is admitted to the plants, and at night the lights should be covered with straw mats. The plants will be fit to cut in twenty or twenty-five days, and after that may be cut every two or three days. When the entire crop has been gathered, the frames should not be removed from the beds until there is no danger of the plants being injured by full exposure to the open air. Not more than half of the Asparagus plants are forced every year in order not to exhaust them too much. The culture which we have described is that of blanched Asparagus, which is also obtained by placing in a hot-bed stools from which the shoots are gathered as they sprout, but in this case the stool is quite lost after the crop has been gathered, and the produce is not quite so strong.

The cultivators in the suburbs of Paris sow Asparagus in February and March, and plant it out afterwards in ground prepared in the following manner:—They make trenches $3\frac{1}{4}$ feet wide, with an interval of the same width between them. These trenches are 8 ins. deep. The soil taken from them is cast on the intervening spaces, and the bottoms of the trenches are filled with manure or street-sweepings. The plants are set in three rows in each trench, at a distance of 1 foot or 14 ins. from plant to plant. The trenches are hoed and weeded during the summer and covered with manure in the spring. The intervening spaces are either sown with Oats or planted with Cabbages, French Beans, Potatoes, or Beet for two years; but in the third year the soil is removed from these spaces and spread about the Asparagus plants, to give greater length to the shoots, which are cut in April, May, and June, care being taken not to run the beds out. If properly treated, they will continue to yield for ten years. It is from these plants stools are obtained for forcing the green Asparagus, known as *asperge aux petits pois*. There are now in use two methods of doing this—one by means of hotbeds and the other by hot-water pipes. Both these methods are practised with unexampled success by two cultivators at Clichy—MM. Vassou and Cauconnier. Therefore we shall describe them. M. Vassou has contrived a special arrangement of frames and lights. About the end of October and beginning of November he commences by making beds of good mixed manure, from 2 feet to 2 feet 4 inches deep. The frames are then put in their places, and the bed covered with a thin layer of soil or spent manure. When fermentation has commenced, and the hand plunged into the bed finds a temperature of 18° to 20° (Reaumur), the stools are planted close to each other. They very soon begin to sprout; the shoots are then covered with spent manure, and the lights are put on the frames. If the weather is mild, air may be given, but the lights should be covered at night, for fear of frost. Should the weather become too harsh, warm manure should be heaped up in the walks. These beds yield cuttings until March. Instead of frames, M. Cauconnier uses a double-glazed building. The air between the double glass acts as a protection,

which keeps out the cold much more effectually than straw mats. The temperature is regulated by a thermometer. In other respects the treatment is the same as in the method first described. Cultivation after this method begins in October, and ends in March. The aspects of these houses very much resemble that of a forcing pit in an English nursery. The seeds are gathered about the end of October from good plants, which have been marked with a stake. They are bruised in water, in order to separate them from the pulp, and then dried in the shade. They will keep good for four years.

(To be continued.)

FLORA ANTIQUA.

THE FLOWERS AND GARDENS OF THE ANCIENTS.

(Continued from p. 404.)

THE earliest allusions to gardens in ancient literature undoubtedly partake largely of the character of fable and tradition. The first we read of are represented as places of extraordinary beauty and delightfulness; little, however, is said of the plants contained in them, scarcely more about their trees; the idea conveyed is simply that of a picturesque and lovely scene, with pleasant bowers, fountains of water, and plenty of fruit, the latter being no doubt of kinds familiar to the writers, as would also be the trees and flowers they mention, which are probably introduced much after the same manner that the Laurel, the Myrtle, the Iris, Roses, Jessamine, and the Crocus are placed in the Garden of Eden by Milton. Some of the accounts of the primæval gardens would seem intended less as accurate descriptions than as tasteful compliments to the princes who established or possessed them; or to be figurative of the charm and opulence of the royal surroundings; while others would seem to have been constructed with a view to the embodiment of some fine old myth, to which the scenery of a garden was most appropriately adapted. These primitive accounts have to be taken, in a word, much as we take the immortal tales that live in marble; those glori-



Picea nobilis, at Newstead, Wimbleton.

ous fictions of the spring-time of the world, which after all are not fictions, but one of the forms in which Truth appears, and as good in their way as the absolute verities. If we are to discard them because they are not true in the same sense that London is the metropolis of England, we must relinquish nine-tenths of all parable and allegory, yea, even of our common and every-day sayings and proverbs. "Dig at the foot of the rainbow, and you shall find a pot of gold." This must go with the legends of the gardens, if we do not recognise in it a mode of saying that reward always comes of industry bestowed upon the soil, no matter under what sky, seeing that the foot of the rainbow is wherever the sun can shiue upon a rain-curtain, therefore the whole surface of the habitable globe; and that the pot of gold is nature's perennial gift to every man who works well and worthily in field or garden. It may be consistent enough in the Age of Iron to disown the myths and the legends, and to laugh at them; but a lifetime of forty centuries will not be extinguished by indifference, or "love of facts;" and longer yet than those of the Tuileries will last the gardens of King

Alcinoüs, the hospitable old monarch who entertained Ulysses after his shipwreck. The account of these (in the *Odyssey*), though embosomed in romance, still carries such an air of reality, that we feel that here, at all events, the poet has drawn less upon his fancy than upon a remembrance of something actually existent.

THE GARDENS OF ALCINOÛS AND OF THE HESPERIDES.

The gardens of Alcinoüs were said to have been enclosed by a hedge (the first that history mentions); "Pears, Pomegranates, and Apples, producing beautiful fruit," were there, with "sweet Figs, and flourishing Olive trees." Then comes the bit of romance, renewed a thousand times in art and verse; "the fruit never perishes, nor does it fail in winter or summer, lasting throughout the year; for the west wind, ever blowing, daily makes some to bud, and others to ripen; Pear grows after Pear, Apple after Apple, Grape after Grape, and Fig after Fig." These wonderful fecundities, the pious old writer continues, were "the glorious gifts of the gods." In a measure, the narrative almost adumbrates the work of a skilful gardener of our own day, who, like "the west wind, ever blowing," of old Phœacia, gives us the produce of his vineries and orchard-houses all the year round. From the description of the gardens of the Hesperides, we may again see that in those early and simple times, whatever the poet's picture was intended to signify, there was practical acquaintance with all the best of the old-world fruits, excepting those natives of India and further eastwards, and that they were valued the same as now, not only the Homeric ones, but the Mulberry, the Almond, the Citron, and the Walnut, all receiving mention from one author or another. Add to the notices by ancient secular poets, those which occur in the Old Testament, and a list more admirable it would be impossible to make out. The idea sometimes entertained that the Orange was known at so early a period, an idea founded upon a too hasty supposition that the "golden Apples" of the Hesperides were Oranges, appears to have no solid foundation. The "aurea mala" of the ancients are far more likely to have been "golden pippins," fruits unexcelled in their class, and quite as certain to have lured Atalanta, or any other girl, from her path. Virgil, by the "aurea mala" which he represents Menalcaas gathering from "a tree in the wood," to send to his love, clearly intends Apples, since the Orange was certainly not cultivated by the rustics of the period when he wrote, and perhaps not in Italy at all; and again, there is the fact that the Apple has been the favourite fruit of story from the time of Ève down to William Tell and Sir Isaac Newton.

GARDENS OF BABYLON.

While the gardens of King Alcinoüs and those of the Hesperides were almost certainly indebted to the poet's imagination for the place they hold in history, there is no certain evidence of the existence even of the celebrated gardens of Babylon. The descriptions would seem, however, as in the former instances, to be fictitious only in part; in respect, that is to say, of the historian assigning to a single spot all that was most admired in the landscape gardening and the floriculture of the period, concentrating in a single description what belonged properly to the country in general. This would be no more than has been done in innumerable cases of a different kind, by the ancient historians, and nowhere more conspicuously than in the ascribing the exploits of a whole band to the arm of the chief who led them; we may assume, accordingly, that there is a tolerably broad basis of truth in the record, and this being conceded, the gardens of Babylon will stand as the first that history speaks of. They constituted one of the Seven Wonders of the World, and comprised within their area groves, parterres, arbours, terraces, woodland walks, grottos, fountains, arcades, everything that the love of handsome vegetation and of shady retirement could suggest; and were so constructed as to allow at the same time of extensive and delicious views of the plains around, and of the windings of the great river Euphrates. History repeats itself in all things. In these beautiful creations, whether true altogether, or true only in part, and after making all allowance for lively language and exuberance of epithet, manifestly lay the prototype of our choicest English pleasure-grounds, those, for example, of Alton Towers, or Blenheim, or Chatsworth. Change the

names of the trees and shrubs; add a sentence or two about ferneries and bedding-out; and the summing-up of elementary ideas, and of the illustrations of constructive thought displayed in each, would serve pretty nearly for either.

That a prospect should have been desired, though in the history of the Babylonian gardens a personal reason is sometimes assigned for their being of the "hanging" or terraced construction, seems to help to answer the question that has often been raised—Had the ancients as quick an eye as ourselves for natural beauty? The affirmative is sustained, since whatever advantage elevation may have been thought to give in regard to purity and coolness of atmosphere, and possibly in regard also to privacy and to security (after the manner of castle-building upon promontories and isolated rocks), it is plain that a wide-spread landscape was a factor in the conception of beauty; and that variety in unity, the first principle of the picturesque, was sedulously aimed at. Whether the Babylonian gardens were ever actually completed in the manner described matters little. The fact remains that in the description we have a grand statement of what a first-class garden ought to be, and is, and a proof that the outcome of the human mind, when it addresses itself to noble efforts and designs in regard to the picturesque, is everywhere and in every age fashioned much after the same pattern. Nothing impracticable is involved in the story of the Babylonian gardens; and what is better, nothing that is opposed to good taste; or, best of all, to common sense, the best certificate of which is, that it always runs abreast of uncommon sense. They say that next best to being a great poet is the being able to understand him. It is quite certain that next best to the execution of such works of art as Alton and Blenheim, is possession of the genius and the ability to foreshadow them in the way that was done at Babylon. Everything that is great in a later age is the fulfilment of some splendid forecast of a preceding one. "Genius," properly translated, denotes that grand constructive faculty of the human mind which takes the common and familiar—an element here, a fragment there, and links together in some original and impressive manner, what, standing alone, counts for little, and scarcely touches us; and at no time is this more excellently shown than when the landscape gardener skilfully manipulates and unites the *dissecta membra*, makes that speak which before was silent, and gives life to that which was lifeless. If a great painter reproduces nature in her best upon canvas, and we praise him, what is due to the man who, like the constructor of Alton, "makes glad the solitary place," and the wilderness to blossom as the Rose? A more happily-selected motto could not commemorate the work of a true gardener than that which catches the eye of the visitor the moment he is inside the Alton grounds, once a treeless rabbit-warren, now a place that Cyrus himself might be proud of. Acquainted as we are with some of the trees employed for the ornamentation of those ancient gardens, we can form some estimate, too, of the peculiar features they would present in point, as Evelyn would say, of Sylva. The effect, for instance, of the Cedar of Lebanon must, in the climate of Babylon, have been exceedingly fine. We know what the Cedar is in England, at Syon for example, so massive, so self-contained, so patrician in the calm amplitude of its changeless green; how superb it must have looked in the sunshine of old Assyria, and in the midst of Oriental things, the aspiring Cypress and the Palm keeping it company.

FRUIT TREES IN ANCIENT GARDENS.

Great character would, no doubt, likewise be given to those early gardens by the abundance of the fruit trees; something, perhaps, after the same manner as now-a-days by the judicious introduction into our pleasure grounds of the Mountain Ash, the Siberian Crab, that brilliant tree, too seldom cultivated, the Scarlet-fruited Sambucus racemosa, the larger Cotoneasters, such as *frigida*, the Holly, with its coral bracelets, and those beautiful forms of *Cratægus* which load themselves with miniature yellow Apples. Fashion has now quite excluded the fruit-bearing tree, emphatically so-called, from the pleasure-ground; it may be doubted whether fashion in this, as in many other things, has done quite wisely; by the re-introduction of some, at all events, of the fruit trees, the pleasure-garden, we fancy, would be the gainer; the Quince, for example, which, when in full ripe fruit, is one of the most

striking things in nature. The fruit of a "fruit tree," cultivated as an object of beauty, goes relatively no sooner than the bloom of trees and shrubs cultivated for the sake of their flowers; a snow-white *Prunus* that shall by-and-by be covered with purple Plums is every bit as good as a pink Almond, that in autumn has nothing to give. "Ornamental" Apples and Cherries, that are good to eat besides, are surely quite as proper as ornamental Gourds, be their display of golden fatness ever so proud. With the ancients the idea of plenty of fruit trees where they were accustomed to take their garden pleasure was always first and foremost; the severance of the flower garden, the orchard, the pleasure ground, and the *culinarium*, seems never to have been thought of; the idea was that which is still preserved in thousands of old-fashioned gardens in England, where lines of flowers run along the margins of the beds of vegetables, like the illuminated borders of a missal; and upon the cottage front Roses and Myrtle mingle with Grapes. Where space allows of it, the keeping of the "useful" portion of the garden quite apart from the purely ornamental, is advantageous and no doubt desirable, from the simple fact that the "useful" is almost necessarily formal and arbitrary, and therefore in direct antagonism to the picturesque; the management and the life-history of crops of vegetables belong also to a different chapter of the art of gardening; it remains true, nevertheless, that in a garden of limited area, where the eye of the owner can superintend everything, every day, the commixture of the useful and the beautiful (of course under limitations that need no reference) will always be most in harmony alike with nature and with the desires of the human mind. Take it as we choose, whether as an obsolete practice that it was quite time to discontinue, or as a proof of practical wisdom, there is no getting past the fact that the copious introduction of fruit trees carries with it the promise at once of ornament and of luxury, two good things instead of only one. In whatever age of the world he may live the best gardener is he whose fruit wins by competition with his nosegays. What an exquisite addition to the picturesque beauty of the ancient gardens must have been supplied by that one delightful tree, the most illustrious in nature, the good Samaritan of the kingdom of plants, the Grape-vine! Probably enough, nay, to an absolute certainty, the Grapes ripened in English hothouses excel the best that Pharaoh ever tasted. We speak not now of the quality of the produce, but of the effect that would be given by the luxuriant and unrestrained growth of the plant, since in the primitive ages the Vines were not trained, as at present, according to strict rules based upon physiology, but were allowed to ramble as best pleased their graceful waywardness. Would not the introduction of the Vine as a purely decorative plant, to mount into trees, and to mingle with other climbing shrubs that make green tapestry and festoons, give to our homes a new and very beautiful feature? Skillfully placed, and with a little assistance, the Grape-vine would add to large

pleasure-grounds the same beautiful effect that is provided in the woodland and the hedge-row by the glossy-leaved *Tamus*, the glorious foliage of which seems less to ascend than to fall in cataracts. The tendrils of the Vine were supplied to it on purpose that it should thus disport itself; though the fruit might never seem different from green Peas, that would not matter; the verdure throughout the summer would always be refreshing, and if those varieties were selected which in autumn change to a deep and glowing crimson (as witness the splendid example in the Oxford Botanic Garden), the Sugar-maple itself could not produce an effect more brilliant. Among the *negative* features of the gardens of the ancients (those, at all events, which existed in Asia), it is important to remember, were the absence of turf and of open gravel walks; the warmth of the climate preventing the growth of the first, except at intervals, and rendering the other quite unsuitable. The primitive gardens were places, in fine, intended less for active enjoyment and exercise than for quiet and repose.



Dracæna Guilfoylei (from a plant in Messrs. Veitch's collection).

To breathe the fresh air, shaded from the sun; to contemplate noble trees and beautiful shrubs, many of them laden with flowers or fruit; to inhale the aroma of odoriferous plants, and to listen to the singing of the innumerable birds that received encouragement to haunt these pleasant scenes, seem to have been the aims in the laying out. Botany, even floriculture as an exact and methodical art, waited for the future. The art of fruit-culture itself was pursued with as little care, the soil and climate being sufficient in their own powers; and only when gardening moved, with civilisation, into Greece and Italy, does it seem to have become identified with intelligent industry. The finest latitudes for the growth of fruits of all descriptions in the open air seem to be those which lie between 25° and 35°. In these, accordingly, where Nature does her own work so well, while the garden flourishes, the post of gardener is almost a sinecure. What has been said, we hardly need add, applies chiefly to the gardens of the early Asiatic nations; the ancient Greeks carried out much the same ideas, modified, of course, in considerable degree, by the climate of their country, and by the national taste; the Roman gardening was a further extension of the same, with the addition, however, of certain features that survived almost to our own day. The first-named people do not appear to have at any time delighted in floriculture exactly so called; their gardens wanted likewise the voluptuous character of those of the Orientals, with whom the seraglio was often an addendum; they would seem to have partaken much of the character of our modern public parks, on a smaller scale, and *minus* the autumnal fever of scarlet Geraniums; especially as they were often converted into resorts for active recreation. Cool and pleasant retreats, where shade and repose could be enjoyed; where the sage could gather his pupils around him—friend meeting friend; these were the objects in view, and for these, of course, walks and avenues of trees would amply suffice. Keenly as the Greeks delighted

in the beauty of nature as a consummate whole, they seem to have been indifferent to the study of its minute phenomena. They observed, but put their observations to very little practical use. Witness, as a curious proof of this, their acquaintance with the sexuality of the Date-palm, and their neglect to deduce from it any hint as to the existence of sex in plants generally.

LEO GRINDON.

(To be continued.)

GARDENING FOR DECEMBER.

THE INDOOR GARDEN.

BY THOMAS BAINES, SOUTHGATE.

Conservatories.—When the earliest *Chrysanthemums* become unsightly they should be removed, and their places filled by such as have been treated with a view to their later flowering. These must be carefully managed so as to prolong their blooming period as much as possible; they should have a little heat at night so as to allow of some air being admitted at the bottom with top ventilation to allow the moisture to escape. *Camellias* are plants which may be induced to flower at any time of the year, yet they do not like too much forcing, for when hurried too much the buds are almost certain to drop off, especially if the atmosphere is too dry. The proper time to regulate their season of flowering is when they make their growth and set their buds; by inducing a portion of the plants to make early growth, and by keeping others later, a longer season of flower will be secured. Consequently if it happens that the bulk of these plants is flowering too much all together, and not so early as may be required, the best plan is to at once remove part of the plants to where they can receive a little heat, and have a sufficiently moist atmosphere to accelerate their flowering, and also induce an earlier growth and disposition to come into flower earlier in future seasons. This separation of the stock is especially necessary where a considerable number of the plants are planted out, and consequently cannot be removed to regulate their time of flowering; where such is the case it is better to reserve those that are planted out for whatever time there is the greatest demand for the flowers, and to use the plants that are in pots for earlier work. That general favourite *Daphne indica* will now be opening its flowers and tempting us to cut more of them than we should do, as there is no plant with which I am acquainted that is more injured by cutting than this. No matter how vigorous and strong the plants may be, not more than half the current season's flowers should be cut, and these with as small a bit of the wood attached to them as possible. Winter-flowering *Epacris* will now be coming into bloom; most of these possess a somewhat stiff upright habit of growth; individually this may be considered a disadvantage, but in the conservatory, intermixed with numbers of other plants of bushy or pendent growth, they are of great use. *Epiphyllums*, now in great beauty, should be placed in prominent situations, and elevated so as to stand clear of their neighbours. *Agaves*, *Dasylyrions*, *Yuccas*, *Cordylines*, and *Rhopalads* might with advantage be much more extensively used in conservatory decoration than they are. Most of the species of these



Picea Pinsapo and *Thuja pendula* in Mr. Murray's Garden.

genera harmonise well with all kinds of blooming plants, and with little change in the materials at command they can be so altered from time to time as to avoid that objectionable monotony of each plant being always in the same position. Keep a good look-out as to the requirements of the next three months as regards blooming plants. During that time forcing pits will be taxed to the utmost in forwarding the different plants required for keeping up the supply. Introduce regularly in succession such plants as *Hyacinths*, *Narcissus*, *Lily of the Valley*, *Tulips*, *Crocuses*, *Solomon's Seal*, and *Spiræa (Hoteia) japonica*, all of which will be required in due course. Do not start more of these, however, at any one time than are absolutely wanted, and never subject them to too much heat, especially top heat; see, moreover, that their root action is in advance of their growth above ground, or disappointment will follow, in the shape of a paucity of flowers. Keep them also as near the glass as possible, so as to prevent a weak unsatisfactory growth; for in the case of plants required for conservatory decoration, where of necessity they are subject to a much lower temperature than that in which they have been brought into flower, it is essential that every means should be taken to render them

capable of remaining in bloom for as long a period as possible. Assist them with weak manure water as they progress; yet before applying this see that there is abundant root action, otherwise it will do more harm than good. Give all the light possible to the first lot of *Cinerarias* and *Primulas*, now coming into flower, by keeping them near the glass. Apply liquid manure every other time they are watered, the object being to get the growth as strong and sturdy as possible; for when introduced to their quarters in the conservatory, they are generally far from the glass, and more or less under the shade of larger plants, where they quickly become unsightly, unless they are in good robust health at the time of their introduction; with this view give air on all favourable occasions. *Azaleas* coming on for early flower, syringe once in the day, to induce them to push kindly, and to keep down insects; but let it be done sufficiently early to admit of the foliage getting quite dry before night, otherwise this will cause these useful plants for providing cut flowers to be deficient in substance. We often hear

it said that this or that flower will flag as soon as cut, when, in many cases, if the plants had been treated so as to give the blooms the requisite substance, there would have been no reason for complaint. I find I have omitted saying anything about the temperature of the water applied to all plants that are being forced. This should always be a few degrees warmer than the temperature of the house in which the plants are placed; and where they are in bottom heat, the water should be as warm as the plunging material, and, if this is deficient in heat, a few degrees warmer. At the same time I do not advocate the application of bottom heat, only so far as to induce root action somewhat in advance of the growth above-ground; and in the case of plants that are intended for removal to the conservatory or for producing cut flowers, I should always advise their roots being gradually withdrawn from bottom heat after their roots had got sufficiently into action. A few *Genistas* and *Acacias* may now be placed in heat; of the latter *A. Drummondii* and the old *A. armata* are the best for forcing. Introduce now a few more of the early spring-struck *Hydrangeas*. *Calla (Richardia) æthiopica* is a general

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favourite, and at no time is it more useful than during the winter months. Where it can be had in sufficient numbers a portion should now be placed in heat; these will quickly throw up flowers, when they are amongst the most telling of conservatory plants. Supply them plentifully with water. Do not keep the temperature of conservatories higher than is absolutely necessary to keep up a slight circulation in the atmosphere, as such would only shorten the duration of the flowers of many of its present occupants; and until there is a considerable introduction from the forcing pit, it is not required high; 45° night temperature will now be sufficient.

Stove.—The work here will be much the same as that recommended for last month. So far as regards the generality of the occupants, treat them so as to induce comparative rest. Such things as winter-flowering Begonias, Aphelandras, Gesneras, Poinsettias, Euphorbias, &c., should be placed at the coolest end, and should receive all the light possible, with a little air whenever the weather will permit; but not in such quantities as to chill the plants, for that is unnecessary, and is, moreover, a waste of fuel. Do not keep too much moisture in the atmosphere, and, as advised last month, keep the deciduous portion of the hard-wooded stock comparatively dry, yet not so much so as to destroy the roots. Now, when the greater portion of the stock is at rest, persevere in the destruction of insects, the increase of which is now at a minimum. Every hour at this season employed at this work is repaid ten-fold by the saving of time further in the spring, when every day brings its full amount of work. The night temperature should now be from 60° to 64°, allowing an increase of from 5° to 8° by day.

Fern House.—Ferns being in a great measure at rest, and their growth matured, they are now in a condition to better withstand the effects of repeated fumigations and extra applications of the sponge, to destroy and remove their two greatest enemies, thrips and scale, than when they are in active growth. The house should therefore be fumigated three or four times, at an interval of ten or twelve days. The plants will, at this season too, bear stronger applications of tobacco fumes than could with safety be used during their season of growth. Go carefully, and as frequently as time can be spared, with sponge and soft brush over every plant infested with scale. Cut away such fronds as are dead, but do not remove any that have even partial life in them, as it weakens the plants. In the case of vigorous-growing Tree Ferns that are outstripping the space that can be afforded them, a removal of a portion of their eldest fronds whilst in full life will be found the best means of reducing their future growth within the desired limits. Any valuable kinds that it is desirable to increase, and that are furnished with ripe spores, may now have such sown in shallow pans, three-parts filled with drainage; over that put a mixture of peat, broken charcoal, and small pieces of sandstone, pressing all moderately firm; well water to close up the interstices, and to prevent the spores getting too deep; after that the spores should be scattered upon the surface; then place the seed-pans in feeders two sizes larger than themselves, and keep them filled with water, so as to avoid the necessity of directly watering the spores overhead.

Azaleas.—These will now be fast shedding their leaves, which, if they are in the desired condition, will turn yellow before falling off. The dull season and diminished leaf surface which the plants possess, will now necessitate a reduction of water; that is, the soil must now be allowed to become drier before water is given than hitherto, otherwise the fine feeding roots are liable to perish. Keep all the plants required for late flowering as cool as can be, without subjecting them to injury by frost.

Hard-wooded Plants.—To these admit air on all favourable occasions, but avoid cold draughts. Keep them occasionally turned round, especially in lean-to houses, or they get one-sided. Keep the whole of the stock near the glass, by which means the plants will bear standing closer together than if they were further from the light; but on no account crowd them. Forward, as time can be found, tying and training, being careful to remove all old ligatures that otherwise may cut the shoots as they gradually thicken. Clean out all dead leaves from the plants, and remove all green moss from the surface of the pots; but on no account resort to the practice of surface-dressing by adding fresh soil to the top of the ball; this is frequently done periodically. No practice, however, can be worse, as the nearer to the surface, even partially exposed, the thick roots that precede immediately from the collar of the plant are, the more likely the plants are to live long. Plants that have their surface roots buried too deeply, generally go off at the collar.

Orchids.—Keep the temperature of the Orchid house the same as that recommended for last month. Angraecums, Dendrobium moniliforme, and the different varieties of Calanthe, more especially the latter, will now be in fine bloom, and the flowers must be carefully treated, so as not to allow them to get wet, or they spot.

This is one of the most valuable plants for providing autumn flowers, and possesses the advantage of associating well with any others, and lasting well when cut, if attended to in the matter of water. Do not allow the plants to shrivel too much for want of water, more especially Vandas of the suavis and tricolor sections, or they will lose their under leaves, which, in addition to injuring the plants, destroys their appearance. Keep *Cologyne cristata* at the end of the house, where there is most moisture in the atmosphere, and supply it sufficiently with water at the roots. Do not, however, allow any to fall on the advancing flower-spikes, as they are impatient of stagnant moisture. A temperature of from 50° to 55° at night will be enough for Mexican plants. Of these place such as are coming into flower at the warmest end of the house. They will include *Cypripedium insigne* and *venustum* and the varieties of *barbatum*, *Lælia anceps* and *autumnalis*, *Zygopetalums*, and some *Oncidiums*. These will be found invaluable for cutting at a season when flowers are most acceptable. In fact many of these old-fashioned winter-flowering Orchids do not receive near the attention they deserve, but have been thrust aside for novelties possessing much less merit. Sponge over all the plants, so as to keep the foliage clean, and remove scale and other insects, which can only be kept under by continuous attention.

Heaths.—In addition to the general routine of attention which the plants receive, go every week carefully over the stock, to see that they are free from mildew. If it is allowed to establish itself the leaves get so seriously injured as to disfigure the plants.

THE FLOWER GARDEN FOR DECEMBER.

BY GEORGE WESTLAND, WITLEY COURT.

No favourable opportunity should be lost in bringing to a completion what planting may yet remain undone. Take advantage of dry and frosty weather to execute premeditated alterations. Such opportunities are also very opportune for wheeling soil, manure, &c., where required, which, under such circumstances, can be done without puddling the ground. Lay turf, and attend to levelling and otherwise repairing lawns, when the weather is open. Nothing imparts a greater charm to a garden now than perfect neatness, with clear, smooth turf, and walks so formed that water never remains upon them, a point altogether indispensable to real comfort and enjoyment. Frequently roll grass and walks, and remove leaves and every particle of decaying matter from beds and borders. In case of severe frost, examine the efficiency of the protecting materials employed; for the roots of many plants must be protected as well as the tops. Lay Box edgings; prune, nail, or otherwise train all hardy deciduous climbers. Take advantage of frosty weather to collect and turn compost heaps for manure.

Shrubberies.—The planting of deciduous trees and shrubs should now be vigorously pushed forward. There are several circumstances in connection with planting beyond merely digging out a hole and cramming the roots into it, which is a great mistake, and one not unfrequently practised. To insure anything like a satisfactory result, the soil should be thoroughly drained and deeply cultivated. Ground that has been producing trees for a number of years similar to those intended to be replanted, is frequently exhausted of the principal elements which constitute their food, and much will depend on the nature of the soil as to what applications are requisite to improve it. The ground should be trenched, and materials likely to promote a rich and fertile soil added. Success in transplanting large trees does not exclusively depend on the quantity of earth removed with the roots, for, from practical observation, I am convinced that balls of earth and roots, more particularly in the case of moderately small plants, are not attended with the greatest success, commensurate with the extra labour incurred, more particularly in the case of long-rooted plants. At this season comparatively large plants may be removed successfully by tracing out and retaining as many of the roots and small fibres as possible, uncut. Spread out the roots regularly in planting, and cover them with the finer portions of the soil, and press it firmly amongst them. After filling in the holes, tread the soil well, and stake the trees securely as soon as planted. In planting do not forget that flowering plants are as pleasing as picturesque groups or any kind of leaf-beauty; indeed early flowering plants should be planted freely. Prune and thin out deciduous shrubs, and give space to the most desirable varieties. A prevalent error, frequently discernible, more particularly so in small gardens, is the improper disposition of forest trees, which are often allowed to attain such dimensions as to subjugate the more valuable subjects. There is often a great reluctance to cut down, but once thoroughly convinced of their obtrusion, do not for a moment hesitate to do so, for by so doing many overcrowded grounds might be opened out and made more pleasing and enjoyable. Shrubberies, when well established, are not benefited by having the ground dug;

at all events the surface roots must not be disturbed. Many kinds of plants will be benefited by being top-dressed with manure and fresh soil. American plants that have exhausted the soil should have a coating of fresh peat, turfy-loam, or leaf-soil, enriched with thoroughly decomposed cow-manure, placed over their roots. Attend to the safety and protection of half-hardy plants, and see that they do not suffer from damp. Clear up leaves, and store them away, so that they may be returned to the ground when rotted.

Pits and Frames.—Cold frames containing half-hardy plants should be freely ventilated, and the lights removed on every favourable occasion. Heated pits should have no more artificial heat than is necessary to maintain their inmates in a healthy state. Take advantage of bright days to expel damp. In case of severe frosts use a slight covering, which is more desirable than an excess of fire heat. Frequently examine the plants and remove decayed leaves, and water sparingly. Protect *Anriculas* and *Polyanthuses* from frost, and air freely in accordance with the state of the weather; water only to prevent them from flagging. Remove the sashes off *Carnations* and *Picotees* on fine days, and tilt them up during wet weather, to prevent them being drawn or weakened. Uncover *Violets* when the weather is at all favourable; protect from frost, and assist those that are flowering with weak manure water.

THE FRUIT GARDEN FOR DECEMBER.

BY WILLIAM TILLERY, WELBECK.

Outdoor Fruit.—November has been another very rainy month, for, with the exception of a few dry days in the beginning of it, rain has fallen on nearly every day. The planting of standard fruit trees, therefore, on all stiff soils, has been postponed until more favourable weather shall have set in. Where there are vacancies on walls to fill up, they can be made good at any time, however wet the weather is; for dry, turfy soil can be procured for the roots, and sufficient drainage given by means of concreting the subsoil. Where wall trees are not looking well, and are unproductive, the roots are generally at fault, the trees should therefore be lifted and replanted; nailing should be pushed on while the weather is mild, for severe weather may come and hinder such operations. Fig trees on walls should now be unnailed, and the branches tied up into bundles, so as to be covered up with straw or dry fern on the approach of frost. Prune Apples and Pears, particularly those which have been showing symptoms of ill-health, and where it is desirable to lift them, remove all the old soil, and substitute fresh material. If they are planted on slight mounds, and the roots are mulched, success will be all the greater. In some orchards, old Apple and Pear trees are much neglected, and allowed to be covered with moss and lichens. Such trees, after pruning out the superfluous branches, would be greatly improved by scraping the moss off, and then washing the stems and branches with a mixture of quicklime and soot, which can be put on with a syringe or garden engine.

Orchard Houses.—All trees in pots wanting a shift should now receive attention. Those which were potted last year will only require a top-dressing of good turfy, loamy soil, mixed with a few crushed bones, or well rotted manure. If the loam is rather stiff, some burnt ashes, chalk, or old lime rubbish added will give it porosity and increase its fertility. When top-dressing, take as much of the old soil off the top of the pot as possible, and make the new soil as firm as the old ball. If the house is unheated, protect the roots from severe frosts by placing the pots in groups and covering them with litter or mats.

Vineries.—The earliest vinery will now be started, or about to be so, and great care will be required as regards the temperature, which should not range higher than from 50° to 60°. When the Vines have fairly broken their buds, the temperature may be increased from 60° at night to 70° in the daytime, when there is sunshine. Prune and dress the Vines in succession houses as soon as the Grapes are all cut, and see that the outside borders are sufficiently protected from severe frosts. Young Vines in pots, if started in the beginning of the month in a mild bottom heat, will furnish ripe Grapes early in May; and as late Grapes in bottles can be kept in good condition till then, with a certain number of structures, a succession of Grapes can be had all the year round.

Peach Houses.—The earliest house may now be started; but a very mild temperature should be given at the beginning, so as not to have the blossoming period occurring before the sun has some influence in setting the fruit. From 40° to 50° is a safe range to commence with, and plenty of air should be given on all favourable occasions. For very early Peaches and Nectarines a dozen or two of trees, grown in pots and forced in pits or low houses with a mild bottom heat, will produce some nice fruit in April or May. The trees in the late succession houses will now want pruning, dressing, and tying to the trellises. Where there is reason to fear that the

borders inside or out are exhausted, some fresh turfy loam may be given to the roots, by opening a trench, carefully lifting their extremities, and planting them in the fresh soil after removing the old. Protect the outside borders with litter or dried Fern, and if some wooden shutters or tarpauling are placed on the top, the roots will be kept quite safe from severe frosts or chilling snows.

Fig House.—This is a good time to shift any plants in pots or tubs that want that attention, using turfy loam, and if of a calcareous nature all the better. A few of the established plants may be put into a vinery at work to force, or into a Pine-stove to produce a few dishes of early fruit.

Strawberries.—The first lot may now be introduced into the early Peach house or forcing pits, and if their crowns have been well ripened and the plants protected from the late rainy weather, they will ripen their fruit by the end of March. Keens' Seedling I find to be still the best for forcing early, and President and Sir J. Paxton to be the best successional sorts. Eclipse is another excellent kind for forcing; its flavour is good, and it carries well. The latest varieties forced last year with me were Lucas, a first-rate Belgian sort, Rev. Mr. Radclyffe, British Queen, and Dr. Hogg.

Cucumbers.—It has lately been very dull cold weather for Cucumbers put out in September or October. All overbearing should be at present discouraged, in order to allow the plants to make healthy foliage and shoots, and if some weak manure water is applied to the roots, with a top dressing of fresh turfy soil, the growths will be induced to come stronger than they otherwise would be. Should thrips or red spider put in an appearance syringe the foliage once or twice a week in the day-time with soot water. This will keep these pests in check as well as act as an excellent stimulant to the roots. In Cucumber houses or pits in which the bottom heat is supplied by hot-water pipes, great caution will be required to see that the soil does not get too dry for the bottom roots. Should this be the case holes must be made in places in the bed and water poured into them to moisten the subsoil.

THE PINERY FOR DECEMBER.

BY JAMES BARNES.

THE short and gloomy days now experienced, accompanied by wet and disagreeable weather generally, are most unfavourable for the swelling and ripening of Pine-apples, as well as for the growth of the plants. The greatest care must, therefore, be exercised in every department. Fruit-swelling requires a genial temperature of from 65° to 70°. Water must be given moderately, judiciously, and only to such as require it at the root, for a kindly atmospheric humidity goes far towards their requirements during these short days, when we have not sun to evaporate it and dry the atmosphere. Such as have finished swelling and are about to colour should be lifted out from amongst the plants that are still swelling their fruit, and should be placed on a dry shelf or light end of the house, and allowed to colour in the best light at command. Water should be entirely withheld while the fruits are colouring, or they are liable to get diseased inside. Even ripe Pine-apples, placed under unfavourable circumstances, are apt to get discoloured and flavourless. Those that are coming into bloom, and such as are showing fruit, require particular attention as regards the application of water and humidity, or they may produce abortive pips or swell unevenly. Those started into fruit will require, for the next six weeks, great patience, care, and perseverance, in order to induce them to swell and perfect it for early spring use, when Pines are always valuable. Those that start after the beginning of the year also require much care and attention; but as the season will then be daily advancing, and becoming more favourable under the care of a cultivator who understands the assisting of Nature's ways, they will always produce fine fruit, at a season, too, when it is much required. Those that start into fruit as the summer advances are sure to produce fine fruit, without much care or trouble, under the superintendance of a careful cultivator. Pines that start into fruit between Midsummer and September, and which have had all the previous spring and summer to aid them, must, if well attended to, be of necessity the strongest of the whole season, and must produce the best fruit. The best season for Pine-apples swelling and producing the largest fruit, in this country, has always been, and always will be, from July until November. We have only to look to the grand show in Covent Garden Market and the other large fruit shops in London and Paris, to see what is regularly produced throughout the early season, and for proof of the facts which I now assert. For succession plants in every stage maintain a regular and kindly atmosphere, and temperature of about 60°, but not too much humidity. Little water need be applied during the short dark days, especially where fermenting material only is employed for heating. Put on both succession and suckers as required.

THE KITCHEN GARDEN FOR DECEMBER.

BY JAMES BARNES.

THE season has now arrived when we may expect occasional obstructions to outdoor operations, so that there should be in store and in the mind's eye plenty of work under shelter, such as looking over old stakes, repainting and tying them up into convenient bundles, and new ones should also be prepared by sharpening and tying them in bundles of a suitable length, for the various purposes required. Clean, point, and paint all old labels, and provide new ones of various sizes, having a well-planed face for writing on. Almost any kind of wood will do for common kitchen garden labels, but common Laurel is the best of all for writing on. Both Globe and Jerusalem Artichokes, if not already protected, should be so at once, a dry day being chosen for the operation. Every other kind of root or vegetable requiring protection against severe frost should also be attended to. Protecting materials should be provided, and held in readiness for any sudden emergency. Wheel manure on to the ground in the early part of the mornings, and trench all spare ground. Look to the drains and water-courses, and see that all are clear; make also new drains where required. Of Asparagus continue to take up strong roots in succession, and place them on a kindly moderate bottom heat. Cover the crowns only lightly at first, but after the shoots have begun to grow an inch or two, surface-cover with light healthy soil to the thickness of 3 or 4 inches. Surface dress old bearing beds with seaweed and seassand, if easily obtainable. Early varieties of Beans plant on warm borders, or sow some in boxes or sheltered warm corners, for transplanting. Peas may also be sown now on warm south borders, on the sides of sheltered banks cast up, and inclining to the west or south-west, for the purpose of being benefited by the afternoon sun, and at the same time sheltered from the east and south-east morning sun, the clear rays of which on frozen vegetables are so detrimental. Early Peas may also be sown in boxes or on slips of turf, for planting out in February. Cabbage and Coleworts that have made their growth, and are ready for use, should, before severe weather sets in, be collected into sheltered quarters, and laid in closely together for protection. By this means they are readily got at, and the ground may be cleared, manured, and trenched, and held in readiness for spring cropping. Choose dry days for the last earthing up of Cardoons and Celery, and have protecting materials in readiness. Of Carrots sow Early Horn, Dutch and French varieties, on a slight bottom heat, in frames or pits, close to the glass, on sweet, light, well-pulverised soil, in rows a foot apart, and also Radishes in drills between the rows, such as the French Breakfast, Early Scarlet, or Short-top. Cauliflower plants placed under hand-lights, frames, or turf-pits for winter protection should be kept clean and a dry and open surface maintained by frequently stirring the earth between them. Dredge with dry dust and wood ashes on the least appearance of mildew, and also with hot air-slaked lime if canker should make its appearance. A light dressing will soon eradicate those two enemies, while neither will have a chance to appear if timely applications are made, and the true observance of Nature's ways are carefully watched. It is through tardiness, neglect, and lack of timely observance that such enemies thrive. If there be any miscellaneous plants of Broccoli left about the borders of the late summer planted, or early coming in kinds, collect them all together, and shelter and protect them against severe weather. Take up Chicory roots and place them to blanch in succession. If Chervil is not sown in boxes for winter use, take up some and place it in boxes to take into a frame, pit, or glass house for winter use. Some may also be protected in a corner out of doors, with boughs or a few stakes interlaced with evergreen branches, Fern, Heath, Furze, or straw. Parsley should also be protected in the same way, unless there is a store of strong plants in boxes or pots for winter use. Keep Endive in frames and pits well aired, and the earth's surface between and about them dry, by frequently stirring it. Tie up the earliest, or that most full-headed, in succession, which will leave room for the others between to more fully expand their hearts. Treat Lettuces taken in for winter use in the same way. All the Lettuce plants sown or transplanted under protection, for planting out early in spring, must be kept well aired, surface-stirred, dredged with dry dusty loam and mortar dust, mixed, in order to command a healthy, sound, and sturdy habit, free from disease. Canker and mildew may be very easily introduced by a little neglect or lack of practical knowledge, but not quite so easily and quickly eradicated when once established. As to Mushroom beds out of doors, on the ridge system, such as are made to a large extent in the market gardens round London, care should be taken when collecting the Mushroom beds to be quick and methodical in replacing the litter the beds are protected with, and in covering immediately with mats, either Russian, Dutch, or home-made straw ones, or thatched hurdles, or light thatched frames made of light scantling stuff,

and sufficiently wide to meet properly at the top of the ridges. All should be made secure against wind and wet, by tying them, or pegging, or placing heavy pieces of wood to prevent draughts or sudden checks. Shed or house Mushroom-beds, now in full bearing, should be encouraged with a genial warmth from 55° to 60°, with a kindly humidity, commanded by the fermenting materials for preparing the next succession bed, or tepid water charged with a little ammonia, keeping the surface of the beds from becoming dry and crusty in the same way, by gentle and genial applications of tepid water. The Sea-kale season being now fully in, secure a plentiful supply of strong roots, and place them in a genial heat in the dark, turning out the roots that have produced a cutting or two immediately, and replacing with new roots; if the old roots are required for planting again, place them in a sheltered corner, either laid in or covered with damp mulching. Strong, clean plants do well for replanting and producing another crop next year. Be provided with a sufficient stock of plants for a month or six weeks to come, in case of frost, either taken up and stored in a cold place, or mulched where they are growing. Rhubarb should now be in good bearing condition; take up roots for succession, and place them on bottom heat, or inside any place where a moderate temperature is at command, such as a Mushroom-house, vinery, or Peach-house, under a plant stage, in a cellar under a staircase, in a corner of a cow-house, stable, or cave, or in any place that commands a little warmth or shelter, this wholesome vegetable may be forwarded. Autumn-sown Onions are apt to get lifted out of the ground by winter's frost; keep them clear from leaves and weeds, and dredge with dry dust. Prepare plenty of straw-mats, thatched frames, or hurdles, and have in readiness any available kind of protecting materials, so that no risk or hindrance may be experienced when frost sets in. Prepare also pegs, crooks, spurs, sticks, and stakes, litter, dry leaves, straw, haulm, and fern; all of which will be found useful for protecting purposes. Dry dust is a most valuable protector for the crowns of plants of any kind, or for dredging Peas and Beans and other seeds when they first make their appearance above ground at this season.

PUBLIC GARDENS.

ARRANGEMENT IN BOTANIC GARDENS.

IN many public gardens the most important parts are cut up with beds and masses till they are meaningless, whereas all arrangements tending to produce this result should be placed out of the way as far as possible. At Kew the worst result is brought about by a general dotting over the whole place of trees, and by the absence of tasteful grouping; in the provincial botanic gardens it is the classification of the herbaceous plants. If the present system of arranging the species of these plants is necessary, we have little right to complain of the present state of things. But it is *not* necessary. Some may say we could not keep collections otherwise arranged, however possible it might be to arrange a general collection well. This is easily proved to be fallacious by the fact that the best collection of rare Alpine plants that exists is that of one who has arranged them in the most charmingly natural manner. The herbarium is the proper place for the plants to be arranged systematically; and if it is said, "We must so arrange the living plants too," the answer is that this end would be better attained than it is now by selecting an order from each of the great divisions of the vegetable kingdom, and doing them thoroughly well. As it is manifestly impossible that all plants can be arranged in this way, and as in botanical gardens generally the system as at present carried out is invariably badly done, there can be little doubt that the better way would be to concentrate one's exertions, and thereby produce a more scientific, that is to say a better, result; and even if a representation of all the hardy natural orders is determined upon on a small scale (it *must* be on a small scale comparatively, and, therefore, may as well be on a concise one), it would not, as a rule, be difficult to so place it that it would not interfere with and spoil the general arrangements of the garden.

E. V.

ALEXANDRA PARK.

THE recent meetings at the Mansion House on the subject of the Alexandra Park, says the *Athenæum*, have rather resembled scenes from some quaint Comedy of Errors than a serious effort to secure a park for the metropolis. Some wayward destiny appears to attach to the fortunes of this estate. It is strong in its natural charms, and

Some half million or more has been laid out on it in the erection of a spacious building, only to be made over to a seven years' slumber, as unbroken as that of a fairy tale. For fully that period of time, quarrels among the proprietors, of no interest to the public except in their blank result, kept the property under padlock. Last year, domestic peace was so far established that an attempt was made to form a public company for the utilization of the estate. The unusual form of a Tontine was attempted, and the result was a total failure to obtain the support of the public. On this the proprietors came to the conclusion that the first requisite was to make the advantages of the estate known, and not to attempt to sell the property, or to form a company, until people were practically acquainted with the existence and the charms of the "Palace." A curious method was adopted, but one which probably "drew." Races were held in the grounds, and a gentleman belonging to the South Kensington staff was engaged as manager. It seemed as if we were merely to have the story of the Crystal Palace over again. A building would be opened in the north of London, professedly for the promotion of science and the improvement of the people, which would probably have been only the Islington Philharmonic in a better situation and on a larger scale. But pending the arrangement for some further efforts in spring, an attempt was made by persons unconnected with the undertaking to get it into their hands, with a view of making it the basis of a quasi-philanthropic scheme. With this object the public were appealed to, first for subscriptions and then for a guarantee of £100,000, as the proprietors declined to enter into negotiations with persons whose qualifications to become purchasers seemingly existed in the airy region in which Spanish castles are said to be built. London was solemnly invited to the Mansion House, first, to be told that the Lord Mayor had no information to lay before the meeting, and then to concur in the resolution, by way of menace, that, until the proprietors fixed their price, the shadowy purchasers would not offer what they, apparently, had not at their command. The whole scene was more suitable for the pages of *Le Sage* than for the public journals of 1872.

PATHS IN THE PARKS.

ANY one returning from abroad—as many are doing at this time of the year—must be struck with the contrast between the perfect order in which the public spaces and gardens are kept there, and the dilapidated state into which, with the exception of certain favoured spots, they are allowed periodically to fall in this country. The blame of this is partly attributable to the people. In France, and in Germany especially, no guards are necessary to preserve the grass from being cut up in every direction. But if the circumstances in our case are not precisely similar, something more might be done than has yet been attempted to keep our large surfaces of grass in at least a tolerable condition. It seems to have been overlooked that the chief injury is not done by those who saunter in the parks for fresh air, but by the hundreds (perhaps thousands) who pass across them on their way to and from their business. The most direct path will of course be sought by these, and this suggests at once the principle on which the majority of the paths should be laid out. And since the gravel-path will only be used in wet weather, and as a guide, it is clear that to lay it out broader than is necessary (as in the case from the Marble Arch to the Serpentine) is only to extend the surface over which the grass on each side will be cut up. These considerations apply especially to Hyde Park, where, for military reasons, the paths cannot be protected by hurdles. The paths in this park, too, are not laid out in the best way to suit the public convenience. Since they were originally laid out, every feature in the neighbourhood, and probably every object in view in designing them, has changed. To take another illustration from St. James's Park, the gate opposite the Duke of York's steps, through which a stream passes most of the day, has no direct communication either with the water opposite or with the bridge, and the grass in front of it is consequently always in a disgraceful state, in spite of the hurdles or the notice-board. The paths leading from this gate, parallel with the railings, are without beauty and of no particular use, as the paths outside the railings are as direct and shady. In fact, the whole of this part of the park requires laying out. Then, when it is necessary to protect the grass, this can only be done by a better form of hurdle, which cannot be climbed over as easily as the present one. The dividing bars should not run horizontally, but vertically, so as to give no hold to the foot; and if the upper bars formed a curve they would be less easily vaulted over. These are a few suggestions which might certainly be carried out with advantage; and it may not be too much to hope that, as there is so much less than usual to be done in the parks this winter, Mr. Ayrton might be persuaded to allow the whole thing to be undertaken for the first time, and perhaps finally, in a thoroughly effectual manner.—LIEUT.-COL., *in Builder*.

An Arboretum for Walsall.—A public meeting was recently convened at Walsall, for taking into consideration a scheme for an Arboretum for that place. The Vicar, who presided, said that the object of the meeting was to further the promotion of a public Arboretum and pleasure grounds for that town. Unfortunately, he said, the project had hung fire, and it now rested with the town as to whether the scheme should be carried out or not. He spoke in favour of the advantages that must accrue to the inhabitants from having the means of such enjoyment as would be provided by having public grounds in their midst. The site selected was in every way adapted for the purpose, being central, and having natural advantages which would be turned to practical account. The extent of ground secured was 18 acres.

Garden Clerk at Kew.—I see that the office of clerk to the curator at Kew is again open, and that the man to fill it must be under thirty years of age. There is not a man in the country "under thirty" competent to do the work. What! are we to be told that any young man (whatever his opportunities may have been) has knowledge superior to that of men who have passed from twenty to thirty years in first-rate gardens! The thing is an insult to them. If the new clerk is only to direct them in keeping accounts, I may state that they have none to keep, except their men's time—not a very complicated affair; one has to keep a register of out-going and in-coming plants and seeds, also quite schoolboy's work. If he is required to keep stores, and assist the curator with his accounts, there is already a very good and honest man who has done that for years, with credit to himself, and which the director has acknowledged. What is much wanted at Kew is a competent person to keep the collections up, there being no one at present there possessing the requisite knowledge; but what good can result from setting some young man to do what is already over done, I cannot see. It cannot be a clerk that is wanted, for we find in a letter dated April 3rd, 1872, the curator stating "I have not work in the accounts, &c., that would employ a clerk for more than two or three hours a day." The fact is, what they want at Kew is a sub-curator who has a first-rate knowledge of plants. When Mr. Robert Smith, the man who stood first in the last competition, was asked if he was competent to direct the foremen (he, knowing the place and what the foremen were) answered "No," like an honest man, though he was one of the best educated young men who had ever come into the gardens. In a letter ("*Blue Book*," pp. 25, 26) dated September 6th, 1871, it is stated "the person should be one who would command the respect of the foremen," but what respect can they be expected to have for a man who has less knowledge of his business than they have? which must of necessity be so in the case of any one under thirty; or all the parade and talk of the knowledge and experience required, before one can be familiar with the routine duties of a garden, is but wind.—J. CROUCHER.

Plants as Weather Guides.—It is well known that certain plants are very sensitive to changes in the atmosphere, and by their behaviour, the opening and closing of their leaves and flowers, &c., serve as natural barometers to indicate the coming weather. A Prussian horticulturist—Mr. Hannemann, of Proskau—gives the signs he has found reliable with respect to the following plants. The small Bindweed (*Convolvulus arvensis*) and the Corn Pimpernel or poor man's weatherglass (*Anagallis arvensis*) expand their flowers at the approach of wet weather, whilst on the other hand the different varieties of Clover contract their leaves before rain. If fine, bright weather is in prospect, the leaves of the Chickweed (*Stellaria media*) unfold, and its flowers remain awake and erect until mid-day. When the plant droops and its flowers do not expand, rain may be expected. The half-opening of the flowers is a sign that the wet will not last long. The Burnet Saxifrage (*Pimpinella saxifraga*) indicates the coming weather in the same manner. As to the small Cape Marigold (*Calendula pluvialis*), should it open at six or seven a.m. and not close till four p.m., we may reckon on settled weather; if the flower continues sleeping after seven, it betokens rain. In the case of the Corn and common Sow Thistle (*Sonchus arvensis* and *oleraceus*), the non-closing of the flower-heads warns us that it will rain next day: whilst the closing of them denotes fine weather. Respecting the weather indications of Bladder-ketmir (*Hibiscus trionum*), the stemless Ground Thistle (*Carduus acanthis*), Marsh Marigold (*Caltha palustris*), Creeping Crowfoot (*Ranunculus repens*), Wood Sorrel (*Oxalis acetosella*), and other species of the *Oxalis* genus, rain may confidently be expected when the flowers of the first do not open, when the calyx of the second close, and when the rest fold their leaves. We may also look for wet weather if the leaves of the Whitlow Grass (*Draba verna*) droop, and Lady's Bedstraw (*Galium verum*) becomes inflated and gives out a strong odour. Finally, the approach of rain is indicated in the case of the yellow Wood Anemone (*Anemone ranunculoides*) by the closing of the flowers, and in that of the Windflower (*Anemone nemorosa*) by their drooping.—T. S.

THE GARDEN.

“This is an art

Which does mend nature: change it rather: but
THE ART ITSELF IS NATURE.”—*Shakespeare.*

GARDENERS AND BOTANISTS.

A VERY instructive series of questions has been forced upon the public by certain events and consequent discussions which have recently occurred. Is the science of the botanist superior to all other kinds of science connected with horticulture? Is the practical science of the intellectual gardener as nothing in comparison? Is the botanical physiologist a personage quite distinct from the routine botanist as a mere classifier? Let the rank and importance of the ordinary botanist in relation to the horticulturist be first considered.

Few will be inclined to dispute the usefulness of the classifiers—the grammarians of art and science—or that they are in their degree men of science; but when, if their position is named in the same breath with that of the horticulturist, they bristle up with thistle-like rugosity, and seem to assume for their motto, “*nemo me impune lacessit*,” people are led to put the question to themselves—Is the mere finder of appropriate names for things a more important person than he who is able to modify, combine, and improve those things so as to make them more useful and more beautiful? In literature, for instance, is the higher place to be given to grammarians, rhetoricians, and lexicon makers? The question is no sooner put than it is at once perceived that these must rank very far below the Homers, and Dantes, and Shakespeares; and that even the secondary and tertiary luminaries of true literature must rank far above the grammarians, from the orthographer to the prosodian. And there was doubtless many a mere learned scholar who in the time of Shakespeare would have perked up his beard with a sense of indignation had he found himself rated below the vulgar writer of stage plays, the fact being, that the acquisition of mere technical knowledge has an invariable tendency to inflate the mind of the possessor with a narrow kind of arrogance, somewhat analogous to that felt by the proverbial bellows-blower in regard to the organ player, when feeling that the playing could not go on without the blowing of the bellows; just as the grammarian knows full well that his mechanical teachings are necessary even to the loftiest kinds of literary genius, above which he is always strongly inclined to place his own acquirements, until the public acclaim salutes the real superior, and then the pedagogue necessarily sinks back to his proper place.

It is much the same with the grammarians of physical science, and especially botanical science. The great bulk of them are mere ticketers and labellers. The real knowledge seekers and gatherers of science go forth and search in every direction the hills, and woods, and seas, discovering for us, in the shape of plants hitherto unknown, new forms of beauty, that Nature in her never-ending creative power is continually producing. These adventurous searchers for things long hidden, regardless of danger to life or limb, are true knowledge seekers—men of science of the highest class. They not only acquire knowledge themselves, but bring to us the fruits of their labour in forms of beauty and interest hitherto unknown, to be the means of still further scientific acquisitions.

The men of museums, the mere grammarians of natural science, the ticketers and labellers and index makers, are, in a way, men of science also, but of a much lower degree; and yet the veriest tyro in the lore of nomenclature and classification fondly estimates himself above these replenishers of our hoards of knowledge, and above those whose persevering skill and practical science naturalise, improve, and adapt the newly-acquired wealth to the uses of mankind. Yet, in spite of this assumed superiority, is not the plodding classifier the mere index-maker of the new volume of knowledge, and nothing more? Such considerations apply more or less strongly to all branches of natural science, but it is their application to the science of horticulture which interests more closely the readers of THE GARDEN.

First in the ranks of science comes the adventurous explorer,

without whose discoveries new fields of labour would not be laid open to our students, for the subject must be produced before dissection and analysis can commence. This was sensitively acknowledged by the Greeks, who honoured men devoted to what are called learned pursuits, not forgetting their botanists; but the first bringing to Greece of the golden apples from the gardens of the Hesperides, was deemed an heroic act, worthy of being attributed to a demigod. We consequently find the adventurous voyage to the far north-west of Africa, for the acquisition of the coveted fruit, taking its place as one of the twelve labours of Hercules. Next in order, though not, perhaps, in rank, come the botanical physiologists; and then come the true utilisers—the gardeners, who cultivate and adopt every means in their power to improve the flavour, texture, size, and every other desirable quality of the subjects they grow. These labours of the gardener, “for the good of man’s estate,” form the most truly valuable section of that human science, or knowledge, which has been brought to bear upon the productions of the vegetable kingdom. Worthy of all honour are the men who, by successive improvements, succeeded in gradually changing the character of the wild and worthless rock Cabbage till it was transformed into a valuable culinary vegetable. All honour to the men who, from the same wild plant, evolved by their watchful toil and practical science, the delicious Cauliflower, the Broccoli, and many other valuable and wholesome esculents.

These are but a speck among the admirable results of horticultural skill. All this is true and practical science, yet but too often it is entirely ignored by the self-styled “men of science” in this branch of knowledge, who, deeming all such new developments “mere varieties” do not even include their leading forms in their botanical dictionaries and encyclopædias, in which those species only which are found wild are included, and the science of the production of new developments is utterly ignored.

Taking this view of the arbitrary system of classification adopted by botanists, M. Du Breuil, the editor of a new edition of the “Citrus Tribe,” by Messrs. Risso and Poiteau, grows very indignant with closet botanists, who, in the depths of their book-rooms, decline to notice strikingly new developments in many classes of plants, which, though distinct enough to raise them from the position of mere weeds to that of a magnificent garden flower, or from that of a rank and poisonous plant to that of a valuable and delicious esculent, they stigmatise as mere varieties, and pass them by as “uninteresting to men of science.”

“One may see them,” says M. Du Breuil in his wrath, “lens in hand, puzzling their brains over an Australian or Cochin Chinese Lichen, before they have learnt, or wish to learn, of what grain the best bread is made.” He tells us that out of the numerous species of Orange trees, “very few are found in the repertoire of botanists, notwithstanding the great interest which these charming trees excite among the people of so many climates, from temperate to tropical.” When we turn from the noble list of the Orange tribe, so exquisitely illustrated in the work edited by M. Du Breuil, to that of ordinary encyclopædias of plants, and find there only eight species of Citrus enumerated, including the Sweet Oranges, the Bitter Oranges, the Lemons, the Limes, the Shaddockes, and the Citrons, we may excuse M. Du Breuil’s excitement. “Since the reforms of Linnæus,” he continues, “botanists have ceased to occupy themselves with an infinite number of trees and plants cultivated in our gardens, because, forsooth, that great man pretended they were mere varieties, and therefore unworthy of the attention of even the smallest minded botanist.” By such a course, we are told, “Linnæus threw down the altars of Vertumnus and Pomona, and with sacrilegious hand tore the most beautiful garlands from the brows of Flora, and has trodden under-foot the most exquisite offerings which man had laid at the feet of the goddess.” By this Linnæan system, the Sweet Oranges which Tournefort had so justly made a distinct class, are, under the name of Citrus aurantia, confounded with the bitter species. “In the present day,” M. Du Breuil continues, “from superior enlightenment, or some other guiding cause, we begin to see certain botanists reverently approaching our orchards and our flower beds, and actually learning the names of fruit which they are eating every day, and of the flowers

which decorate their windows. Let us hope that they will now actively assist in bringing to perfection a branch of knowledge which they had either neglected or abandoned, for we must feel convinced that all opinions which are extreme or exaggerated cannot be lasting. It may be curious and interesting to study the mosses and fungi of Cochin China and Monomotapa, but it is *absolutely indispensable not to neglect the trees and plants by which we are nourished, and the flowers by which our daily life is embellished.*" M. Du Breuil has much reason on his side of the question.

Finally, it may be fairly assumed that the science of horticulture is quite as much a science as that of botany, and that the intellectual gardener is as much entitled to respect as the botanist. To dogmatically attempt to assign a positive superiority to either side might be deemed invidious, and had better not be attempted. H.

NOTES OF THE WEEK.

— NINE hundred barrels of American Apples were sold by auction at one sale in London last Wednesday. They are sent over in neat barrels, each containing from $2\frac{1}{2}$ to $2\frac{1}{2}$ bushels. They are packed in the simple way recently described in THE GARDEN, and arrive without a taint, the barrels of the Newtown Pippin Apples smelling as sweetly when opened as a bunch of freshly-gathered flowers. At one time sawdust and other materials were put between the Apples, and at that time they generally arrived in a mouldy and bad condition.

— MESSRS. Lovell Reeve and Co., announce a new part of Bentham and Hooker's "Genera Plantarum" at the commencement of the new year. It will include Dipsacaceæ, Valerianaceæ, Compositæ, and Rubiaceæ.

— THE Beach Plum (*Prunus maritima*) will not, it has been said, tolerate cultivation, or even live away from its native sandy soil and salt-water breezes; but a Jerseyman resident many miles from shore, tells the world, through "Moore's Rural" that he has had this "large shrub" growing on his premises for several years, and that it annually yields a full crop of fruit—small, round, of a purplish colour, and sweet but not richly flavoured. He thinks it would make a most excellent stock for dwarfing the stronger-growing species and varieties, and that by hybridization a new and valuable race of this fruit might be produced.

— THE temperance question, now much agitated in France, brings to the surface one ingenious reformer, whose zeal for the cause is at least equal to his discretion. He proposes to outlaw the growth of the Grape, and to make the French abstemious by encouraging the propagation of the worms that destroy the roots of the Vine. He would thus do away, not alone with the Vine, but also with the vanity of the French, for, says the *Saturday Review*, "it is impossible to conceive that vanity could remain to a nation whose salvation had been effected by so humble and earthy an instrument."

— AMONGST Orchids now in flower in Messrs. Veitch's nursery, at Chelsea, are *Lycaste lassioglossum*, a kind with brown flowers which have a very hairy lip; the finest variety of *Cattleya exoniensis* that ever bloomed in the nurseries; *Lælia autumnalis* in a suspended basket, with seven great spikes of bloom; *Dendrobium Johannis*, a new Orchid with very dark-coloured flowers; and many other fine kinds, such as *D. crassinode*, *heterocarpum*, &c. Besides these there are also fine plants of *Oncidium Weltoni* bearing upwards of a dozen flowers on a spike; and some fine *Cryptopidiums*, especially *C. vexillarium*, a hybrid between *C. Fairianum* and *barbatum*. Other better known kinds include many varieties of the lovely *Odontoglossum Alexandræ*.

— THAT curiosity among plants—*Godwinia gigas*—is now in full flower in Mr. William Bull's Nursery, King's Road, Chelsea, being the first time it has bloomed in this country. The individual flower, or more properly, spathe, is nearly 2 feet long and $1\frac{1}{2}$ foot in circumference, and is produced on a stem only 18 inches high. This is the largest Aroid, both in leaf and flower, of which we have as yet any precise knowledge. It was discovered by the late Dr. Seemann, on the Chontales Mountains of Nicaragua, where it grows amongst brushwood in broken ground near rivulets. It is a plant which grows with great rapidity, making sometimes several inches during a single night. It produces only a solitary leaf, and after that has died off, the flower spathe makes its appearance. The petiole is often 10 feet long, covered with minute spiny projections, and has a mottled surface, greenish-yellow, barred and striped with purple, giving it the appearance of a snake standing erect. The blade of

the leaf, which is green on both sides, is 3 feet 9 inches long, so that the whole leaf is 13 feet 8 inches long. The flower spathe, which is of a thick leathery texture, outside is of a dark bluish brown, and inside of a dark brownish red, with the exception of the base and those parts surrounding the spadix, which are whitish yellow. The spadix is only 9 inches long and 9 lines across, and bears hermaphrodite flowers. The original specimen, sent home by Dr. Seemann, attained, the first year of its cultivation, to within a few inches of the dimensions which this plant acquires in Nicaragua.

— POTATOES least affected by disease in Cambridgeshire are Myatt's Ash-leaf Kidney and Rivers's Royal Ash-leaf Kidney. These have yielded crops containing full 90 per cent. of good sound Potatoes, and very fine samples as to size. The Nonpareil Kidney has also yielded satisfactorily, the crop being prolific, and the effect of the disease positively insignificant. Among the round kinds of Potato the Rock has produced good crops, and with but only a small share of disease in many instances. All other kinds of Potatoes planted for use in winter, whether kidney or round, have been an utter failure.

— THE next meeting of the British Association for the Advancement of Science will be held at Bradford, not on September 19, 1873, as was fixed at the Brighton meeting, but for the convenience of many who have objected to the date, a fortnight earlier than that time. The Vice-Presidents appointed are Earl Rosse, Lord Houghton, Mr. W. E. Forster, M.P., and the Mayor of Bradford.

— WE learn that a Pear of good character, a seedling from the White Doyenné, has been raised in the garden of the poet, William Cullen Bryant, on Long Island, and named the Bryant Pear.

— THE Royal Botanical Society of Belgium and the Botanical Society of France, have just decided to make in common a scientific excursion next spring in the valleys of the Meuse and Scheldt.

— It may give some idea of the scale on which fruit preserving is carried on in America when we say that the Benton Harbour, Michigan, Packing Company preserved during this, the first year of its existence, 175,000 cans of Peaches, 120,000 of Tomatoes, 30,000 of Strawberries—in all 400,000.

— THE great provincial show of the Royal Horticultural Society for next year is not, as was first said, to be held in Park Farm, but in a more suitable and beautiful spot, the Royal Victoria Park, Bath.

— It is stated that Mr. Edward Ackroyd, one of the members for Halifax, is about to have laid out an extensive public park and recreation ground at the north end of that town.

— MR. PETER HENDERSON says that experiments with pure water, sawdust, charcoal, anthracite, brickdust, and sands of all colours and textures, showed that cuttings placed in each, in the same temperature, rooted almost simultaneously, and equally well.

— It has been recently discovered that the leaves of the common Bay (*Laurus nobilis*) possess great value as a febrifuge.

— WE notice that an able writer in the *New York Tribune* places the Hemlock Spruce (*Abies canadensis*) at the head of all the plants used as hedges in the northern and middle states of America; and from what we saw of it as a hedge plant in Philadelphia, we should say it deserves the honour. We should like to see it tried in this country; the drooping shoots give the hedge a peculiar and most graceful appearance.

— COMMENTING on the statements of Dr. Howsley and Mr. Fuller, who have expressed the opinion that there are not two varieties of the Newtown Pippin, Charles Downing says, in *The Rural New Yorker*, that "Coxe, in his work on fruits, published in 1817, gives descriptions and outlines of both the yellow and green Newtown Pippins; and I well recollect at that time they were always considered two distinct varieties." If we clearly comprehend Mr. Downing's meaning, he not only holds the same view now, but finds that the green pippin keeps longer, and, though not so firm in flesh, is more crisp, juicy, and of higher flavour than the yellow.

— WITHIN the last twelve months sewage works were set in motion at Danzig, in Prussia, a town of 100,000 inhabitants. A company has contracted to keep the works in order for a space of thirty years, and for this service they have during the same period control of the sewage and possession of 2,000 acres of land. This land is two miles from the city limits, and is partly forest but chiefly a sandy desert, in which aforesaid nothing whatever could be induced to grow. Now mark the change. The pumps were started last May, 100 acres were irrigated once a week through the season, and the result has been fine crops of Rye grass (which grew an inch a day) and Potatoes and Beet-root of enormous size. Deputations from various parts of Germany have visited the farm, and many of the large towns are proposing to follow so good an example.

THE INDOOR GARDEN.

SCREW PINES.

THESE are natives of the Eastern hemisphere, where, when old, they often become much branched and form immense heads of long and graceful leaves; this habit of branching is, I think, peculiar to this genus of the order Pandanaceae, or at least it is quite exceptional; in this state they are both grand and singular objects. In addition to their branched heads and long spirally-arranged leaves, they become elevated above the ground upon a large cone of adventitious roots, thus presenting a thoroughly tropical appearance. They are extremely ornamental in a young state when grown in the plant stove, and many of them are admirably adapted for household decoration; for which purpose we have hitherto been too much satisfied with simple hardy ornamental plants. As our acquaint-

specimens may be discarded. In ordinary summers the Screw Pines will stand very well in sheltered spots in the open air, and advantage should be taken of this, and their full beauty enjoyed before consigning them to the rubbish heap. Screw Pines are mostly found growing in swampy places near the sea coast; consequently they require a copious supply of water, and I have often found that a top-dressing of sea-weed had a beneficial effect upon them; this material, however, is not easily obtained by inland cultivators, but I would strongly advise those living near the sea coast, where sea weed may be obtained for the gathering, to apply an occasional dressing of this material as a stimulant. For young plants use a mixture of sandy loam and peat in about equal proportions, and when the plants increase in size use nearly all sandy loam, and drain well, to prevent the soil getting sour, through the water becoming stagnant.



Pandanus Veitchii.

ance with plants possessing graceful and highly-ornamental foliage increases, the inferior kinds give place to them; therefore I hope to see this genus play a more conspicuous part in our dwelling-houses than it has hitherto done. It can be introduced without displacing any other established favourite. I purpose, therefore, to notice a few of the cultivated species, which well deserve the attention of those possessing a stove. I do not mean, however, that every amateur having such should grow all the kinds here named, for unless the accommodation for stove plants is very extensive they would produce a monotonous appearance, which is a point to be avoided in every arrangement of plants either in or out of doors. By the time the plants become too large for an ordinary stove, most of them will have thrown up suckers or produced some lateral shoots, by which means the cultivator may renew the stock of young plants, and the overgrown

Pandanus utilis.—This well-known species is a native of the Mauritius, where it is called the "Bacona." The bags in which the Mauritian sugar comes to this country are made from its leaves. These bags ultimately come into the hands of the fishmonger, who disposes of them to our city men, who take home their fresh salmon in them to their suburban dwellings. The leaves are broad, in a young state arching, and taper to a point; the ground colour is glaucous green, whilst the margin and midrib on the under side are deep red, and armed with spines of the same colour. It is a beautiful object upon the dinner table, and may also be used as a permanent window plant or for room decoration; and as an exhibition plant it is unsurpassed; its noble mien, and broad, spirally arranged, leaves, also render it a grand ornament in a large stove.

P. elegantissimus.—This is a native of the Mauritius, and may be called a miniature of the preceding; its leaves are narrower, and altogether it is less robust, so that amateurs with limited accommodation will find this best suited to their purpose. The leaves are

spirally arranged, dark green, except at the base, where they are glaucous, while the edges and back of the midrib are armed with deep red recurved spines; it is equally as serviceable for indoor decoration as *P. utilis*, and it forms a superb plant for public exhibition.

P. javanicus variegatus.—This is a native of Java, and in a young state is a remarkably handsome plant for table and indoor decoration. As it increases in size it produces lateral growths so freely that a stock of young plants may always be easily maintained. The leaves are long, narrow, gracefully arched, and armed at the edges and back of the midrib with white spines. The ground colour is bright green, through which run longitudinal bands and stripes of pure white. I cannot speak too highly of this plant for general decorative purposes.

P. furcatus.—This is a broad-leaved, handsome species, widely distributed over the East Indies, but differing slightly in general appearance, according to the position and climate in which it may be found. In the normal state the plant has broad, dark shining, green leaves, spirally arranged, and armed on the midrib and margins with large, white spines. It forms a grand plant for standing in large vases, for the temporary decoration of apartments, and it is also a noble ornament in a large stove.

P. Vandermeerschii.—This is another of the red-margined kinds, which seem to be more in favour with plant growers than the white-spined sorts. It is an exceedingly handsome species, somewhat like a small and slender form of *P. elegantissima*. Its leaves are long, narrow, gracefully arched, dark green, glaucous at the base, and margined with a band of dark-reddish crimson, where it is also armed with spines of the same colour as well as on the back of the midrib. It is suitable for any decorative purpose and remains uninjured in the drawing-room for a long time. As a stove ornament it cannot be surpassed by any member of the genus. It is a native of Round Island, a small spot in the ocean, a short distance from and a dependency of the Mauritius, where however, if report is correct, it is likely soon to become extinct. A friend of mine who recently visited the place says the little island is overrun with rats, and these being very little food for them they devour everything within their reach, and the Pandanus nuts are devoured as soon as they fall.

P. Veitchii.—The accompanying illustration will give some idea, although a very faint one, of the beauty of this plant. It is one of the many fine discoveries of that indefatigable traveller and collector, the late Mr. J. Gould Veitch. If my memory serves me rightly this is the second species of Pandanus which has borne the name of Veitchii, for in the great International Exhibition held in London in 1866 I have a vivid recollection of a grand plant so named, and which moreover differed from all the other kinds which I had seen, in having its broad leaves arranged in a distichous instead of a spiral manner; therefore, although delighted with the present plant, I have still a longing to know when we may hope to see the other in our collections. The subject of the present illustration is striped with white in a similar manner to *P. javanicus variegatus*, but the leaves are shorter and broader, and the alternating bands of dark shining green and pure white are also much wider; it is armed with spines at the edges of the leaves, but differs from most other kinds in being almost or quite destitute of them upon the under side of the midrib. As far as my experience extends with this plant it appears to be as hardy as the other kinds, but it requires to be grown in bright light to bring out its variegation well. It is a native of the South Sea Islands.

P. ornatus.—Perhaps the most elegant of all the green-leaved and white-spined kinds; the foliage is broad, arranged in very close spirals, and armed at the edges with short closely-set white spines, and larger ones on the back of the midrib. The upper surface is a deep green but paler underneath. I have used this plant in the sitting-room for short periods, and it is very handsome and effective. It is not yet, however, sufficiently common to be risked too much. It is a native of the Philippine Islands.

P. graminifolius.—This will not be of much service to the exhibitor; neither does it make a conspicuous object in a stove, but it is well deserving of extensive cultivation for the decoration of apartments and the dinner-table. It has long, narrow, and very deep-green coloured leaves, which are furnished with small white spines at the edges. They are beautifully arched, and if grown in small pots, form charming objects in ornamental vases for the permanent embellishment of the drawing-room.

P. reflexus.—For a permanent stove specimen there is a massive grandeur in the style of growth belonging to this plant not to be found in any other species with which I am acquainted, but it is of comparatively little use out of the plant-house. The leaves are arched and bent back; they are long and broad, measuring as much

as 6 feet in length on large specimens; the colour is very dark-green on the upper side, but slightly paler below; the edges are armed with long white spines, and the back of the midrib is also furnished with large reversed ones of the same colour. It is a native of the East Indies.

P. spiralis.—This plant somewhat resembles *P. elegantissimus*, but differs in its much narrower leaves, which are dark green, and slightly glaucous; it is furnished at the edges and back of the midrib with deep red spines. It is apparently a very hardy kind, and this, combined with its slender and graceful habit, renders it specially adapted for room decoration. It is a native of New South Wales.

P. decorus.—This is a plant recently introduced from New Caledonia. I have had but little experience with it, but judging from its appearance and the trials made with it, I am persuaded that it will become a very useful plant for all purposes of decoration. The leaves are long, narrow, and of a bright green colour, and are furnished at the edges with small closely-set white spines, as is also the back of the midrib.

P. ceramensis.—This is a dwarf-growing species, which will become a favourite with our plant growers when better known. Its leaves are closely set, beautifully arched, bright dark green, furnished on the edges with light, closely-set spines, but destitute of them on the back of the midrib.

There are several other species in cultivation, but the above are amongst the best, and will afford the amateur or gardener sufficient scope from which to make a choice selection.

G.

TREE CARNATIONS.

THERE are two modes of propagating these Carnations, viz., by cuttings or pipings, and by means of layers. Perhaps the simplest plan is to place some old plants in heat in January or February, and to make cuttings of the young shoots, placing them round the edges of 60-sized pots, and putting the pots in a gentle bottom heat, not too moist; a mixture of loam, leaf-soil, and sand will suit them perfectly. In this the cuttings soon strike root, and when sufficiently established should be potted singly into 60-sized pots, and kept close for a time, when they may be hardened off and placed in a cold frame. The usual practice is to prepare a piece of ground in the open air, which is well manured, and even dressed with soot and lime after it has been deeply dug. In this ground the young plants should be placed in beds, each plant being firmly pressed into the soil, and carefully staked at the proper time, in order that wind may not break the growing shoots. About the middle of September the plants should be lifted from the open ground, and placed singly in 32 or 24-sized pots, according to their size and requirements. When potted they should be well watered, and should then be placed in a shaded position for two or three weeks, and syringed overhead in fine weather at least twice a day. When the plants have established themselves, they should be placed in a sunny position on a bed of ashes, slates, boards, &c.; but as soon as the autumn rains set in, they should be placed under some temporary covering, where they can have plenty of air. By this time the flower-stems will be showing themselves; the plants should then be removed to a house that can be warmed in severe weather, and in which they will bloom through the autumn, winter, and spring. Plants well rooted should receive liquid manure about once a week during the blooming season. Some growers set their plants on a layer of well rotted moist manure, and allow the roots to pass through the bottom of the pot into it, a practice which greatly assists the development of fine high-coloured or well-marked flowers. Tree Carnations should never be allowed to become pot-bound. Growers of them have sometimes done almost irreparable injury to these plants by allowing them to become very dry when pot-bound. The plants should be shifted as soon as the pots get well filled with roots, and placed during the winter in a light, dry, airy house, where they can get all the sun possible, without being exposed to draughts. If the plants get very wet at the roots, they are apt to suffer from mildew and canker; it is therefore necessary that abundant drainage be given them, and the stage should be so constructed that the water passing from the pots can run away freely. Should the foliage show symptoms of mildew sprinkle the parts affected with sulphur, and in case of

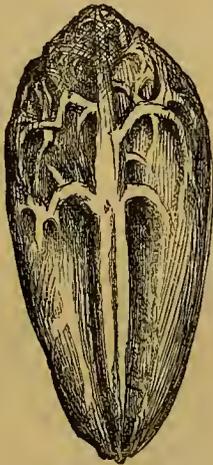
green fly settling on them, a sharp syringing with soft soap and water will soon clear them of that pest.

The following sixteen varieties will form a good collection to select from, viz. :—Ascot Giant, white, heavily edged with red; Avalanche, pure white; Beauty, white striped with scarlet; Bonle de Feu, scarlet; Brilliant, scarlet striped with crimson; Congress, bright scarlet, fine; Diana, bright rose; Hector, mottled scarlet; Jean Bart, large bright scarlet; Maiden's Blush, bluish white; Mont Blanc, pure white; Oscar, yellow, large and full; Prince of Orange, deep yellow edged with crimson, extra fine; Valiant, rosy scarlet; White Nnn, pure white; and White Rival, a large and fine white variety.

Quo.

A SCULPTURED PALM SEED.

Among the numerous freaks, I ought to say, beauties of nature, few are more remarkable than the seed-vessel of a small Palm, the charm of which consists in its bearing on one face of the seed the form of the tree sculptured very perfectly in *alto relievo*. The seed-vessel was first brought to England from Madagascar, but the plant is not believed to be indigenous there. It is, however, plentiful in the Mauritius, and doubtless also on the eastern shores of tropical Africa. It is said to be nearly allied to the *Latania glaucophylla* of Commerson. It has not been grown in Europe, and in fact, but little is known of this Palm. Dr. Hooker kindly furnished



Natural size.

me with all the information he could obtain respecting it. According to Loddiges, it is called *Cleophora dendriformis*, and according to Martins, *Latania Loddigesii*. The leaves are fan-nerved (*palmato-flabelliformis*). I shall feel grateful for any further information your readers can supply about this little seed, the most artistic in character among all my carpological specimens.

E. W. COOKE.

Glen Andred.

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Training Camellias.—It is seldom that one sees Camellias trained, still it is the best thing that can be done with scraggy old plants. If they are tied in as closely as possible, they will soon break freely from the old wood and make well furnished plants, a thing they will rarely do if left to themselves. I lately saw a dozen fine plants that had been trained by way of experiment some years ago, and they were in fine healthy condition and bore a profusion of buds. Those who have leggy plants would not regret giving this plan a fair trial.—F. W. B.

How to Treat Imported Plants of Venus's Fly-Trap (*Dionæa muscipula*).—I received plants of this last spring in tolerably good condition, and potted them at once into thumb and small sixty-sized pots, according to the strength of the crowns. The compost used for them was a mixture of chopped sphagnum and fibrous peat, in about equal proportions, with a little sharp silver sand and a sprinkling of finely broken crocks, all mixed together. A common wooden frame was then set up in a shady position between two hedges and a layer of fresh sphagnum was laid in the bottom of it. In this the pots containing the plants of *Dionæa* were plunged up to their brims and as closely together as they could be conveniently stored. The sashes were then put on, and the plants are still in the same position. Under these circumstances, nothing can be more satisfactory than the beautiful growth which they have made.—W.

THE FLOWER GARDEN.

BEDDING OUT.

I CAN confidently affirm, in spite of "W. R.'s" denial, that the system of bedding-out has done more than anything else to spread the love of flowers, and that there are ten gardens gay now for one that was fit to look at before. No doubt many old herbaceous plants have been discarded to make room for half hardy plants, which require winter protection; but the question is, are not these plants really more valuable and interesting than those that they have displaced? and are not many of the old herbaceous plants relegated to their proper place—a botanic garden? I do not deny that there were, and are, many beautiful old perennials, but now that persons are seeking to bring them back to their former importance, how few there are comparatively that are worth planting out in dressed ground immediately in front of a house; and many of these, as Phloxes, Pentstemons, Gladioli, Lilies, Pansies, &c., are already used for bedding-out purposes. It is impossible for all persons, even the wealthiest amateurs, to grow every kind of plant: that can only be done in national collections, such as the Botanic Gardens at Kew, and elsewhere. Every person consequently must select for himself what kind of plants to grow, and if most amateurs have chosen to devote their attention to the more beautiful forms of half-hardy plants, and have used them in groups, or massed them in beds, and planted them according to geometric arrangements, I do not see that their taste is to be condemned as utterly base, even if many of the old herbaceous plants should have suffered in consequence. "W. R." attempts to show that the contest does not merely lay between herbaceous mixed borders and bedding plants, by devoting one part of his reply to my paper to describing other forms of flower gardening. Now I am quite as much an admirer of trees and shrubs as he is, but I do not see how they can be called flowers, or how they can be made to take the place of Verbenas, Lobelias, &c., in front of a house. It is like recommending a large mastiff or a bloodhound to a lady who wanted a pet lapdog. In defending bedding-out I am not speaking merely of those large gardens attached to noblemen's and gentlemen's houses, where there is plenty of room in the adjoining grounds for shrubberies, pinetums, rock gardens, &c., but I am defending the system also in small villa gardens near towns, and in the little gardens of amateurs in the country, where there is comparatively little space. A few shrubs and trees may be used as adjuncts to set off, or to protect and border their gardens; but what use would it be to tell a gentleman, who owns a small villa garden, with a little greenhouse in which he cherishes his bedding plants during the winter, that he is guilty of bad taste, that he ought not to neglect trees and shrubs, and rock gardens, and perennials, and ought to have a Wellingtonia as a centre, and plant his Geranium beds with Lilacs and Laburnums, edging with Rhododendrons and Weigela, &c.; and to put a rock garden instead of an iron palisade to protect him from the road; and that he must no longer devote his little greenhouse and spare time during the winter to bedding plants, but fill it with hardy plants and succulents, which can take care of themselves. I again affirm, if it had not been for such half-hardy plants, as Geraniums, Verbenas, Ageratums, Petunias, Lobelias, &c., very few of the small greenhouses, which can now be seen in such numbers against villas and country houses, would have been built, and the usual stamp of mixed herbaceous border, which one saw in villa gardens twenty years ago, would have been stereotyped—borders put under the care of an ignorant labourer, dug over every autumn or winter, and then left to take care of themselves. I know some of these borders that still exist in their pristine ugliness, never looking gay at any one period of the year, and, with the exception of a few withered leaves, looking just as bare in the winter as a bedded-out geometrical garden, and certainly more untidy. I do not deny for one minute that herbaceous borders in the hands of skilled artists, like the Rev. Mr. Ellacombe and the Rev. Harper Crewe, &c., may be made both beautiful and interesting, but then there are very few gardeners who have the botanic knowledge or cultural skill which is required for such collections as Mr. Ellacombe, Mr. Crewe, Mr. Nelson, and others possess. Wherever there is room I am in favour of allotting a portion of the garden to the cultivation of select perennials and herbaceous plants, and I would also introduce into the summer bedded garden, for the sake of variety and form, late-flowering perennials, as Yuccas, Pentstemons, Gladioli, &c., and dwarf-growing Alpine plants, as Arabis, Aubrietia, &c., but the period of flowering of most herbaceous plants is so short, that, however intrinsically beautiful some of the plants are of themselves, I am not in favour of using them in the bedding-out garden, which should be a thing *sui generis*, and not be injured by beds, which after they have done blooming must either remain blanks or be filled up with other plants. I can, again, equally with "W. R.," admire rock

gardens, but they are not in their places in the position now occupied by bedded-out gardens, and "W. R.'s" soul revolts quite as much as mine against those abortive efforts after rockeries made of clinkers, broken bricks, hard heads, oyster shells, tree stumps, and *id genus omne*, dignified by the name of "my Alpine garden." I agree with "W. R." that I think in large gardens much more might be done with rock gardens, but there are not many places where the proper materials can be had without considerable expense, and in no case need they interfere with the summer bedding-out system, as nearly all the Alpine plants are spring bloomers. Indeed I was at Backhouse's only two or three days before "W. R.'s" last visit, and I can safely assert that in all that extensive rockery on the 6th of September there were not more flowers than I could have carried away in one hand. It is beautiful in spring and early summer, but it has comparatively no floral display in autumn. Still I should be glad to see more attention paid to the rock garden proper, especially where, as at Cragside, advantage can be taken of the natural rock scenery; but as a rule Alpine rockeries and ferneries ought to be in separate and secluded places, though not necessarily far from the dressed ground. I am more catholic in my views than "W. R.," and while admiring bedded-out gardens, can equally with "W. R." appreciate good examples of herbaceous gardens, and also trees, shrubs, and rockeries. I cannot go into raptures, however, with "W. R." upon mere ferneries, or mere fern without colour. Mr. Backhouse's fernery under glass, though picturesque and beautiful for the form of foliage, is cold and wanting in colour, and it would be far more beautiful in my mind if, instead of covering the roof with paint and crevas, to darken it, advantage was taken of many of our beautiful creepers, as *Passifloras*, *Lapagerias*, &c., to cover the roof, and if coloured ornamental foliaged plants, as *Begonias*, *Funkias*, &c., were mixed with the Ferns.

"W. R." falls exceedingly foul of me because I have recommended suitable houses to be built for bedding plants, and to take as much pains in the winter management of them as with plants and shrubs which are grown for the ornamentation of conservatories and stoves. Now, as I say, and again affirm, that one reason, and the principal reason why bedding-out is open to a certain amount of detraction, is because sufficient pains is not taken with the winter management of plants, and consequently the beds are not properly filled with good plants at bedding-out time. I cannot see that the remedy I propose is singular. He says, "imagine any folly you like offered under the name of good advice, and you will find nothing more pernicious than this." What? That if persons wish to do justice to bedded out gardens they should have proper houses, and pay proper attention to plants in the winter! If beds are bare it is because the plants put in to fill them are not good, but if, after the spring plants are removed, fine healthy plants of what we denominate bedding plants are put in, the beds are gay at once. And then "W. R." talks about "the ugly idol," and the "floral pigments to adorn the idol's hide." Let me quote what my friend "S. R. H." says in the "Six of Spades": "Let me now say, that the man who can look upon beds well arranged of these summer beauties, bright with a soft splendour when the evening sun is low, and feel no admiration nor enjoyment, does not realise my idea of a florist," and again, a little further on: "How could they look on these jewels in their setting of emerald, this exquisite picture, framed by dark glossy evergreens, or (as at beautiful Hardwicke) by tall graceful arches of Honeysuckle, and the climbing Rose, and not confess that the scene before them, as a brilliant display of floral beauty, outshone their brightest dreams." I could hardly fancy that "W. R." cannot admire a bedded-out garden, yet when he calls it an ugly idol, and when he speaks of it as I have known him do, as hideous miles of scarlet Geraniums, I presume he thinks he has a soul above it. When, however, "W. R." uses this kind of language against the whole system of bedding out, he surely turns argument into abuse and does not gain any converts. Again, he takes hold of my words "a garden should be much like a good carpet" and twists them into a meaning they were never intended to have. I merely took the simile of a carpet to illustrate my meaning as to harmony of colour, and I was only speaking in reference to a bedded-out garden and not to the whole garden in general. If any person wishes to assure himself of the fact let him turn to page 408 of THE GARDEN, where my whole sentence is quoted, and he will then satisfy himself that I only used the simile with reference to the tone of colour, and that "W. R." need not have gone into such a tirade against it. I am much obliged to him for patting me on the back a little further on, and saying there is, in fact, much hope in my case, because I can admire mixed Verbenas, and do not like pounded bricks and ashes, &c., but I fail to see how planting a set of beds with mixed plants makes the beds ungeometrical. My set of beds, as I look at them out of the window now, are certainly geometrical, and intended to work into geometrical spaces, but it would not alter the

shape of the beds if I planted them next year with mixed herbaceous plants; it would only take away entirely from the harmonious adaptation of colouring, whereby one plant can be made, by judicious planting, to help to bring out and increase the beauty of another. "W. R." tries to make out there is no such thing as geometry in nature. What does he say to the shapes of berries and fruits, and to the forms of the flowers of plants, and leaves, such as the Clovers, Trefoils, &c.? There is, in fact, hardly a single geometrical figure or curve but what has its counterpart in nature, and no garden patterns are, in my opinion, worse than those scrawling or (to use a Yorkshire expression) scrawling beds, which are cut out with reference, be it supposed, to the picturesque, but which have no definite form or shape. This is, however, entering upon a very wide field.

In another place, "W. R." says: "It is utterly impossible for any person with any knowledge of the glorious richness and infinite variety of the garden flora now within our reach to take any real interest in the geometrical colouring of the ground with plants, which is usually called bedding-out. Hence it is to a great extent simply a question of intelligence as regards plants and also of mental growth, to admire bedding-out plants. I deny *in toto* that any but the feeblest interest can be excited by it," &c.

Now, this is simply begging the question. How can "W. R." possibly measure the interest that I or others take in bedding-out with that which he may take in those other forms of gardening he recommends. I know many amateurs who take very great and absorbing interest in their bedded-out gardens, and study the forms and colours of plants, many of whom would not have done so had it not been for this very system which "W. R." has not got the power apparently of allowing the slightest merit to. I cannot, however, wade through all the rest of the false argument he deduces from this basis, but must take notice of one other. He says: "Of one thing all may rest assured, that a system of arranging beautiful plants, which in any way gives offence to any human being, is wrong, and the bedding system has done this in innumerable instances." Now, this is an utterly fallacious mode of argument, a piece of special pleading that can, I should think, mislead no one. As well say, after a person had built a beautiful church, that he must not use any fresco paintings or polychrome mural decorations, for fear of giving offence to Puritanical persons, or to Quakers, who despise any form of aesthetic art. Am I to give up the bedding-out system for fear of offending the eyes of "W. R."? I can safely say that I have had hundreds, nay thousands, of persons in my gardens, having, on the occasion of our annual horticultural shows, as many as 1,200 persons in a day, and I never as yet heard of one person whose delicate sense of natural beauty has been offended by bedding-out; but, on the other hand, I have had many persons remark that they much preferred my garden to the tents full of exhibition plants; and gardeners have been especially interested in comparing the merits of the different kinds of plants. I can sincerely pity "W. R." if he really thinks bedded-out gardens ugly patches, but I conclude it is only a *façon de parler*, as he himself, according to his own code of rules, would admire the same plants if dotted about irregularly, without any laws of taste or harmony of colour, but so as to produce a more *natural* effect. But (query) is it a more natural effect? Does not nature generally group its flowers in masses? Look at Heather. Look at Gorse on our commons. Look at the masses of Blue-bells, Hyacinths in our woods. Look at the meadows of autumn Saffron or the sheets of Cowslips in the spring. Do we not admire and appreciate these natural beauties more on account of the masses of colour they give us? Can "W. R." be the same person who, in writing on Alpine plants, pages 38, 39, 40, and 41 of "Alpine Flowers," by William Robinson, says: "The dwarf and succulent Alpine plants are capable of affording beautiful and distinct effects from their neat foliage and habit alone, and the introduction of them is one of the most rapidly-growing improvements now taking place in our flower gardens." And again, "Their great value as border and rock plants need not be spoken of here, as we are now merely considering them in relation to the bedding system, from which, till recently, they were completely excluded. In addition to the making of neat little panels, borders, edgings, and beds, they may be employed for forming *carpets* to act as a setting for larger subjects, a very pretty way of using them," and again, page 41, "The ways of arranging these plants, so as to secure the most satisfactory effects, vary much. They make the most *exquisite* little geometrical gardens yet seen, and have also been used with the most *charming* effects in the English or natural style of garden on a miniature scale."

Now I would appeal to any readers of THE GARDEN, who have also seen the work on Alpine Flowers, whether the figures on pages 38, 39, and 41 are not the most formal geometrical figures that can well be imagined, so much so, that with all my love of bedded-out

gardens, they are far too formal for my taste, and partake too much of the millinery style. Either "W. R." is not the William Robinson who wrote "Alpine Flowers," or else he now considers his exquisite little geometrical gardens *ugly idols*, and his carpets of Alpine plants *ugly patches*. All plants that can be adapted and used for the bedding system are bedding plants, and it is just as deceiving to say that by bedding plants only tender or half hardy perennials are meant, as to classify and dignify a certain number of plants as florist's flowers, to the exclusion of others. A florist's flower is any flower a true florist can cultivate; a bedding plant is any plant worthy of being planted in the bedded-out garden.

I have spun out this answer of mine to a greater length than I intended; I will only conclude by saying there is plenty of room in large gardens for every form of gardening, and it will be a very bad thing when bedded-out gardens are done away with, if they are to be superseded by nothing better than what "W. R." recommends. And I can safely assert that whenever I have seen a good bedded-out garden intelligently planted and well arranged, with a good assortment and selection of flowers, there I have also seen other forms of gardening well cared for and attended to. There may be exceptions to this rule, but not many. There may be a few beautiful and interesting herbaceous borders, but if those at Kew and the old one at Chiswick are to be taken as a sample, I will only add, save me from having to introduce borders such as those in front of my window, instead of what I have at present.

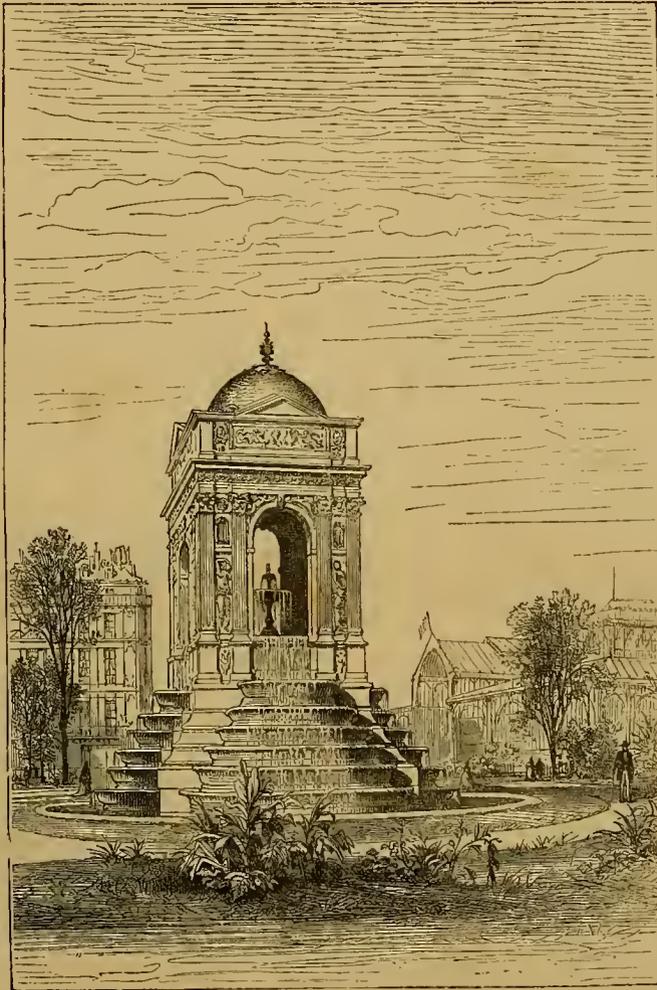
C. P. PEACH.

A FOUNTAIN NOT IN A DESERT.

A FOUNTAIN not placed in a stony, leafless desert, but surrounded with trees and velvety expanses of turf, out of which spring many kinds of rich-hued flowers, is a very much more attractive object than one which has no such charmingly arranged surroundings; no hues of living green flecked with flower-flashes to contrast with the delicate tones of its carved and fretted marbles. The annexed engraving represents the celebrated Fountain of the Marché des Innocents, at Paris. It is the work of Jean Gougeon, the great French sculptor, who fell a victim to a chance shot from an arquebus during one of the endless *emeutes* of the time of the Guises, while, with mallet and chisel in hand, he was bestowing the master's final touches on the sculpture of his beautiful fountain. The work now enjoys a more advantageous position than it did originally, in consequence of the great openings effected in that dense part of the city for the construction of the Halles Centrales; and, taking advantage of the increased space, the authorities whose duty it is to watch over the embellishments of the city, and who never neglect an opportunity of adding to them, have planned a small city garden round about the exquisite masterpiece of Gougeon; and the pretty little island of garden being trimly and carefully kept, considerably increases the general attraction of the ever-flowing fountain, and makes the small open space a perfect oasis of beauty in the midst of

the densely-built streets by which it is surrounded on every side. The glitter of the fall of water down the marble steps, devised by the architect-sculptor, and its soft rippling sound in the midst of a sweet garden, from which spring flowers and trees, is very refreshing in the midst of the din of city life, and creates a sensation of repose in the turmoil of its bustle and ceaseless movement, that is always delightful.

Let us turn for a moment from the pleasing contemplation of "a fountain not in a desert," to the aspect of a pair of fountains which are, most undeniably, in a desert of the blackest, barest, and dreariest kind that it is possible to conceive. "Look at this picture and on that." The fountains in Trafalgar Square, standing in the midst of a sooty waste of cracked asphalt, compared with the fountain of the Marché des Innocents, might form rival illustrations for a "Tale of Two Cities;" the one a city of marble and flowers, the other a city of stone, and brick, and soot. How is it that the black and always bleak-looking waste about the fountains in Trafalgar Square—bleak-looking even in the summer sunshine—is allowed to remain in that desolate condition which excites the astonishment of all foreigners, knowing as they do, from the continual boastings of our national vanity, that we consider it "the finest site in the world?" One could understand it in Berlin, where professorial and Yunkerian Schweinkopfs rule over the absent beauties of the ugliest and dirtiest city in the world; but in London, the stronghold of common sense, the unwearied persistence in the principle of "how not to do it," is incomprehensible.



What can the honourable chairman of the Board of Metropolitan Embellishment (we must surely have such a board) be thinking about or avoiding thinking about? The deeply, darkly, drearily, dull expanse remains unbrightened, except by the occasional reflected gleams from the pools and puddles which in the many "dismal hollows" of the black asphalt relieve the monotony of the scene after heavy rain. We are indeed an inscrutable race, of an inscrutability which is fabulous—fabulous because it illustrates that truly national fable in which the tortoise outstrips the hare in the race. We are decidedly the tortoise in the race of nations and civilization—so slow, so far behind, and yet so sure to win in the long run—the long, long run which leads to the true winning-post of peoples. The great British tortoise always wins at last; and so eventually in the far-off future time, we are safe to see the shrubs and flowers of Trafalgar Square eclipse those of the Place du Louvre and the flower market of La Madeleine, and even the bosquets of the Champs Elysées—just as we have lived to see the Thames Embankment eclipse at last all the finest embankments of city river shores on the continent.

NOEL HUMPHREYS.

THE BELLADONNA LILY.

WHEN well grown, this is one of the handsomest bulbous plants we have; its colour a charming silvery rose. It is a native of the Cape of Good Hope, but may be grown in the open air with great success in many parts of England and Ireland. The popular name Belladonna has been given to it in Italy, in consequence of the charming blending of red and white in the flower, resembling the complexion of a fair woman. In this country it should always be planted out in a south aspect, in a border close to the wall, or in that of any glass house in front of which it can be placed without interfering with other subjects. Once planted it should not be disturbed for years, till it, in fact, requires division. I have a border of it here several hundred feet long, running along the front of the houses, and the display of beauty it makes in the autumn is simply astonishing. I plant them in a border of good loam, well rotted manure, and a sprinkling of charcoal, and there allow them to remain for years. They grow in early spring most luxuriantly, then die down or go to rest in May and June, and commence sending up their strong flower spikes in September, and with us continue flowering away till near or about Christmas. I think the "secret" of mine flowering so remarkably is that I do not disturb them after once planting well, and that the border is packed full of their great roots. There can be no difficulty in thus growing them in most parts of England, and no plants are better worthy of a place in our gardens.—J. B.

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

Windsor Castle.—Now that the summer occupants of the flower beds on the east terrace have been removed, they have been planted with varieties of hardy shrubs and coniferous plants, arranged with much taste by her Majesty's gardener, Mr. Thomas Jones. The effect is very good indeed, and strikingly illustrates what may be done in this way with properly selected materials.

Parochetus communis.—On visiting the Botanic Garden, Glasnevin, this week, I was much pleased to see in the front border, opposite one of the ranges of conservatories, a patch of this pretty plant, fully a yard square, covered with its lovely blue flowers. The plant has been in flower during the last eight weeks, and seems inclined to go on flowering as much longer, unless any severe frost prevents it.—R. A.

Schizostylis coccinea.—Among notes on autumn flowering plants for the flower garden, I have seen no mention made of *S. coccinea*. I have a plant or rather clump of it, about 2 feet in diameter, growing in the open air, with upwards of seventy spikes of scarlet flowers now in great beauty, and it has been in that condition for these last three weeks. I know nothing that will flower in the open air at this time of year, so well adapted for a front position in any flower garden as this plant.—J. D. MITCHELL, *Fulmouth*.

THE FRUIT GARDEN.

THE VINE IN THE OPEN AIR.

(Continued from p. 430.)

KEEPING GRAPES.

ANOTHER method of keeping Grapes is the following, which is generally practised in France:—Cut the Grapes, when ripe, with as much wood attached to the bunch as possible, and place the end of the shoot with the fruit into a bottle of water, into which a pinch of animal charcoal has been dropped. The latter preserves the water sweet for a year or more. The end of the shoot may be put into the water or made to touch it merely, or not touch it at all, as preferred. The Grapes will keep fresh and plump if the shoot only touches the water; and they keep almost equally well if a little water only is poured into the bottom of the bottle, the space round the shoot being stuffed full of cotton-wool, bees' wax, or putty. Sufficient insensible vapour will be developed and kept in to keep the Grapes plump. Finally, the bottle ought to be slightly tilted, so that the Grapes may hang free of its sides. Grapes stored thus in spare bed-rooms, store-rooms, dry cellars, or attics, will keep good from two to four months. They should be looked at once a week, and any suspicious berry cut out. Kemp's registered Grape rail does away with the use of bottles, and has the merit of allowing a great many Grapes to be suspended free from contact with each other in a small space. Each rail is complete in itself, and any number can be laid in the bracketed sides, one above the other. Adjust the rail, and put in a small portion of Kemp's Grape compound or a pinch of animal charcoal; cut the Grapes with 3 inches of wood attached to them, and place them through the small nozzles provided for them; then fill up the water-proof rail with clear spring water, commencing at the top rail and working downwards, and the work is done. The feet of the frames, which may hold six, or less or more, rails, must be made fast with screws to the floor of the fruit or store-room. Place them in any dry frost-proof room or closet; the Grapes will keep plump and fresh for three or four months. Another mode of preserving Grapes is to take a close-spurred cordon Vine through the

bottom of a large flower-pot, coiling it once or more round the sides of the pot, and either notching the shoot immediately inside the pot, after the manner of layering, or not. Then train the top of the Vine rod in any desired shape, such as a spire, balloon, or globe, and fix it firmly with stakes or trellis over the pot. The buried stem will fill the pot with roots, and when the fruit is ripe in the autumn the connection with the root is severed, and the pot placed in any cool dry place till the Grapes are wanted for eating. This is one of the most safe and charming modes of keeping Grapes, and is within the reach of all who can buy a flower-pot or old packing box for a few pence. By multiplying pots or boxes any number of Grapes may be so grown and safely stored for Christmas, wedding, or birthday festivals.

USES OF GRAPES.

Men can live and work on Grapes and bread. The peasantry of France, Spain, and Italy make many a satisfying meal in this way, and of the wholesomeness of the diet there can be no doubt. Medical men constantly recommend the use of Grapes for their patients. Scarcely any plant can equal the Vine as regards the beauty of its leaves and fruit. As a covering for bare walls and for affording shelter and shade it is a climber of the first rank. To sit under one's own Vine has in all ages been considered the acme of rural happiness,—an emblem of peace, a symbol of plenty, and a picture of contentment. That pleasure, though perhaps not in all its fulness, may become the heritage of thousands in these temperate climes. Neither our latitude, longitude, nor leaden skies, nor erratic climate forbid the growth of the Grape Vine throughout the larger portion of the kingdom. In many districts its fruits will ripen more or less perfectly. In almost all it would ripen sufficiently to be useful for eating or wine making. Even green Grapes are useful for conversion into vinegar, for making tarts, or for wine. Ripe Grapes are universally esteemed. No one tires of them. If any declined to eat their own Grapes, or grew more than were needed for home consumption, there is a ready market in most neighbourhoods for Grapes at from fourpence to a shilling a pound, according to quality. Thus a flourishing Vine on the gable end or front of cottages might make or save the rent many times over. I know many cottage-gardens in which the Vine or Vines are not only their chief ornaments, but the main source of profit. These might be multiplied up and down the country to infinity. As a means of increasing their number, I would suggest that prizes be offered by all cottage-garden societies for the best trained and most fruitful Grape Vines on cottages. I have known this done to such excellent effect that the Vines became models of both; and such a spirit of emulation was stirred up that one labourer had paid another two days of his wages to do up his Vine for him. There need be no fear of an excessive supply, neither are ripe Grapes so perishable as most other fruits. Cut with a piece of wood attached, and placed in bottles of water, or even suspended in a dry room, the ripe fruit will keep good for months, and even improve by keeping. Besides, the Grapes that are not eaten can readily be converted into a cheap beverage. The prejudice against home-made wines has hardly reached the labouring classes. On the contrary there are few of these who do not contrive to make a few bottles of Elder, Currant, Primrose, Gooseberry, or Rhuubarb wine. Those of them who grow Grapes mostly try their hands likewise at real wine-making. All this is better than nothing but beer, cider, or gin. I have known cases not a few in which a little home-made wine in the cupboard has proved the strongest attraction to keep husbands at home. Neither is there any reason why home-made wine should be confined to the working classes. In many parts of England wines could be made equal or superior to many of the so-called wines of France and Germany. The chief fault of our out of door Grapes has been a deficiency of sugar, and most of the receipts for the manufacture of Grape wine, with an astounding perversity, begin by making that deficiency less, by adding so many gallons of water to the Grapes. The next step is to restore the balance of saccharine matter, by adding so much sugar to the gallon of the watery juice or must. One can only wonder at the waste of all this trouble and expense. Why not operate on Grape juice as it is? and if that is too acid, add a little sugar. Perhaps, however, it will be most useful to give a few receipts with and without water, and thus allow your readers considerable latitude in making their own wines. It will be seen in the sequel that if we err in watering our must or Grape juice, we err in distinguished company; for if we water once, many of the French and German wine makers water many times, and stew and torture the lees into the bargain. Lest, however, their example should prove infectious, and lead to imitation instead of avoidance, I will conclude by giving one or two good examples of wine making.

BRITISH WINES.

1st receipt for making Grape wine from British out of door Grapes.—To three pecks of Grapes, picked and heaped, add three stones of

moist sugar and nine gallons of water. Bruise the Grapes carefully before mixing them with the sugar and water. Put the whole into a large open vessel, and stir them daily for ten or fourteen days. When the fermentation ceases pass the whole through a fine sieve, and put it into your cask. Be sure it is quite filled; then bung it down, and keep it for a twelvemonth in the wood before bottling.

2.—A primitive receipt for British Grape wine:—Gather the Grapes on a fine day, and squeeze each bunch as gathered. To each gallon of juice add a gallon of soft water and three pounds of loaf sugar. Allow the stalks and seeds to remain during fermentation, which will continue steady for some days. When it ceases strain the wine into a clean cask or vessel. Do not bung down for three weeks or a month, until all fermentation has ceased. This wine was bottled in ten months, and mistaken by many for Moselle. Another method, which resulted in Champagne, was to use the same proportions and to put the wine in the second cask without waiting for the fermentation, adding, however, a third more sugar.

3.—Grape wine. Water $4\frac{1}{2}$ gallons, beer measure; Grapes five gallons, ditto; crush and soak in the water seven days; add seventeen pounds of loaf sugar. This makes thirty-four bottles of wine, some of which was kept for ten years, and was excellent at the expiration of that time.

4.—British Champagne. To one pint of Grapes, picked and bruised, add one quart of water. Let it stand twenty-four hours, then strain through a sieve, and add to every gallon of liquor $3\frac{1}{2}$ pounds of loaf sugar. Rack it the following day, and hang an ounce of isinglass in the cask. In two or three days stop it down close. Bottle as soon as the sweetness is sufficiently off.

5.—To make good English wine, procure a new cask, or one that has held wine or brandy, and a few smaller ones, or hard stone jars or bottles. The large cask is to press the Grapes and ferment the wine in, and the smaller ones to rack it off into afterwards. Some would reverse this order, ferment in the small and keep in the larger cask. But the wine is likely to be better when fermented in a body. It has even been said that the larger the quantity the better the wine. Gather the Grapes on a dry day, sort carefully, removing all green and mouldy Grapes, break every berry by squeezing with the hand into a headless cask or tub and press them. The juice will have a gravity on the brewer's saccharometer of from 15° to 30° . Add sufficient loaf sugar to bring it up to from 35° to 45° . This may require three or four pounds of sugar to the gallon. Place the must in some cellar or store-room where the temperature ranges from 55° to 60° . It will ferment in any quantity, from a gallon upwards. It is a good plan to leave the saccharometer in the vessel, its gradual depression will mark the process of the conversion of the sugar into alcohol and consequent attenuation of the wine. If effervescing or champagne wine is wanted rack the wine when the saccharometer reaches 15° . If a still dry wine let it sink to 5° . Fine or bung down by the use of isinglass dissolved in spirits of wine or white of egg. If it keeps working rack again, a great point being to change the wine free from dregs into another cask as soon as fermentation ceases. Add no brandy, the wine will be strong enough without it. A second lot of wine may be made from the same Grapes by returning the husks, seeds, &c., to the press, covering them with water, and either pressing at once or leaving them to stand for two or three days. By the latter method the wine will be the strongest and of higher colour, but with the strength there will be a degree of astringency which it is almost impossible to get rid of. A tolerable wine has been made in England with Grape cuttings and tendrils and sugar and water, without Grapes at all.

CHASSELAS.

(To be continued.)

Flavour of Fruit.—Mr. Gilbert's lament about the flavour of fruit is not confined to one locality or to one county, but I fear applies, this season, to all our hardy fruit-growing districts. The best and most juicy which I have had this season were grown upon a strong clay, but unfortunately the few bushels I had were quickly gone, a score or two of workmen assisting in the raid upon them long before they were ripe. Pears this year are not good anywhere; Louise Bonne of Jersey, Marie Louis', Passe Colmar, Beurré Diel, and Glou Morcean have all been watery; a remark which also applies to Jersey Chaumontel and Glou Morcean purchased a few days ago at the first shop in Covent Garden, at from 6d. to 1s. 3d. each. Notwithstanding this high price, they were simply uneatable. I have great faith in the hygienic effect of a good Apple eaten at bed-time, and for that purpose generally provide myself with a few pecks of the best for "home consumption." One of my favourites is the Nettinghamshire Bess Pool, but this year she has jilted me. Mostly very rich but not juicy, in the wet season of 1869 it was

both rich and juicy, and I calculated it might be so again this dripping season. But no; buy it where I may the quality is positively dry and harsh. Court Pendu Plat threatens to play me the same trick, so that after the Ribstons and American Newtown Pippins are gone my chances of a good Apple will also be gone for the season. This matchless American Apple (the Newtown Pippin) is irregular in quality this season. Of three samples bought in Covent Garden the other day, the flavour of one lot was exquisite, the second passable, and the third, though the finest in size and appearance, not eatable.—W. P. AYRES, Newark.

The Vintage.—In France and Germany this has been unfavourable. In Bordeaux the Medec has produced two-thirds of a crop, but in the Cotes, Bourg, and Blaye vineyards the wine will not attain to half an ordinary yield. No decided opinion can yet be given as to the quality. Probably they will rank above the wines of last year, though far below those of 1869 and 1870. The vintage in Champagne has again been unfortunate. It commenced unusually late, after a summer of unfavourable weather, and the produce exceeds little more than the fourth of a good year. The wine, if not actually bad, will at least be of ordinary quality. Of Burgundy vineyards, those of the Côte d'Or have produced about two-thirds of an average quantity. In the South of France, the Hérault, the Aude, and the Gard districts have been highly favoured, and each will produce a large quantity of good wine. The Cognac district will yield a fair average of excellent quality. On the Rhine and Moselle the vintage of this year has been even more disastrous than that of last. Several of the vineyards will not give more than the tenth of a fair crop. The quality is expected to be good. The Hungarian vintage has been attended with very varied success. The quantity of wine produced has been extremely small in some of the vineyards, and even from the most productive only half a crop has been obtained; but the gathering was made under the most favourable circumstances, and the quality is expected to be the finest that has been produced for many years.

NEW SHAKSPEREAN IMPERISHABLE LABELS.

Messrs. Bell & Thorpe, Padlock Nurseries, Stratford-upon-Avon, have sent us various examples of these labels, which appear to be both durable and good. They are made of white metal which withstands the action of the weather, and are of various forms and sizes.



Indeed they can be manufactured to suit any pattern, or any name required can be affixed to them in black-faced raised letters. The cheap rate at which they are sold brings them within the reach of every one. The annexed illustration represents a suspension label for fruit trees.

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

American Orchards.—Ohio has 346,826 acres of orchard, and the Apple crop this year is enormous.

Amount of Water and Sugar in Fruits.—Apples, Pears, and Peaches contain from eighty-two to eighty-six per cent. of water, and most other fruits nearly the same. Grapes contain nearly twice as much sugar as Apples, more than twice as much as Currants, three times as much as Raspberries and Currants, and five or six times as much as Apricots and Peaches.

Old Espalier Apple Trees.—At Denney Abbey, near Cambridge, there is a grand old espalier Apple tree, with two enormous limbs on each side of the trunk, extending some 57 feet in length. The stem, which forms a double cordon, is about $4\frac{1}{2}$ feet in circumference—grey and aged looking, but apparently in perfect health. The kind is the old Cambridge Pippin or Bedfordshire Foundling.—J. CHATER.

Tomatoes.—Mr. Culley, gardener to E. Salt, Esq., at Fernhurst, near Leeds, has adopted an excellent plan in reference to the culture of Tomatoes. Finding that they would not succeed out of doors, he plants them out in the bed of a small span-roofed Melon house, and trains them up the glass, stopping and thinning as may be required. The result is a bountiful crop of the finest fruit during the latter part of the summer and autumn. Fruit is still being produced by them in quantity, and it comes in very acceptably. In most sheltered parts of this country, Tomatoes succeed perfectly planted out under south walls, but in exposed positions the above is an excellent method of securing fruit.—F. W. B.

THE LIBRARY.

NATURE PICTURES.*

BY J. H. DELL, ENGRAVED BY R. PATERSON.

THESE nature pictures are many of them very charming examples of the labours of the pencil and the graver. The style of work is honest and fresh—there is none of the old conventional style of wood-cutting about them, and the original pencilling of Mr. Dell has evidently been conscientious and painstaking. He has a true eye for the picturesque, schooled by a devout study of the works of the great masters of landscape painting. The best pictures of Constable, Cattermole, Anthony, Forster, Creswick, and even Turner, have all tended to the education of Mr. Dell's pencil; and he has evidently not overlooked in his studies some of Rembrandt's grand moonlights, and Rysdael's plunging and foaming waterfalls. Upon such a course of study, adopting the best principles of effect and composition, Mr. Dell has formed a style of his own, which is remarkably sound and original. Mr. Paterson, his conscientious engraver, has evidently sought novelty in the resources of wood-engraving in the study of the cleverest French examples of the art; by which a number of new and exquisite effects have been achieved, which the old routine, still adhered to by many English engravers, declines to adopt. The softness obtained by French wood-engravers through the medium of careful stipple, and close, half-tint cutting, possesses great advantages in concealing the mechanism of the art: while the more ordinary methods of English treatment, though exhibiting wonderful mastery and facility of handling in the orthodox style, displays, even ostentatiously, the mechanical methods of the process. Mr. Paterson has endeavoured to blend many of the most successful methods of the two somewhat opposite schools, and in many instances he has been eminently successful in preserving the softness and the freely artistic touches of the pencil in his very clever cutting, without losing any of the depth or force of the original work, much of which so often disappears under the butchery of an unskilfully-handled graver.

The first plate, "The Grange," forms a very happy combination of the respective labours of the artist and his engraver. There is nothing whatever in the cutting which suggests merely skilful mechanism. The touches are made to appear as free as though they were the work of the etching-point, and the result is a charmingly effective picture, in which both processes, that of the pencil and that of the graver, tend to form a work which is truly artistic in every respect. How delightful are these old granges and manor houses, and manses of the secondary class, which belong to the Elizabethan and Jacobean periods; with the great Elms growing close up to the mullioned and latticed windows! That is to say, how delightful they are in pictures! And long may they be preserved as models for our future Dells to draw, and our future Patersons to engrave; but as residences, our modern improvements and sanitary considerations are weaning us from them day by day. Their treed-up closeness, their low, badly lighted, and utterly unventilated halls and galleries, and their small and stuffy chambers, are sadly at variance with our modern notions of comfort. And yet they still exercise a sort of fascination over us which it will be very difficult to eradicate; at all events so long as Messrs. Dell and Paterson give us such attractive pictures of them. The composition under notice recalls strikingly some of the best of the sketchy pictures dashed off by the fluent brush of Cattermole, but it is more closely knit in its effects, and has greater depth and solidity of treatment; recalling very strongly the intensity of effect of French art of a similar class.

The second subject, "A Village Church," by moonlight, recalls Anthony, in his best mood. There is a magnificent picture of Chingford church by his powerful pencil, which is strongly called to mind by this fine piece of clever drawing and excellent engraving; but the "nature picture" by Dell and Paterson is, nevertheless, quite original, both in conception and treatment; and, moreover, it should be stated that the grand work of Anthony's, which has been alluded to, is a daylight and not a moonlight scene. The next subject

* London: Frederick Warne.

that specially arrests attention is "The Flock." The composition consists of a flock of sheep driven along one of those shady English lanes which are made a long continuous bower by over-hanging Ash and Oak and Elm. In the distance, in a shadowy hollow, we get a glimpse of a sheet of water, sleeping without a ripple in the early twilight; while upon the flock of sheep falls one of the last slanting rays of sunlight, and the long shadows of coming evening, checkered here and there with a fleck of light that has struggled through the hedgerow trees, throw the rest of the picture into soft, hazy shadow. It is a pretty picture, and one that need not be disowned even by a Birket Forster.

"The Forest," with its smooth-barked Beeches and its squirrels leaping deftly from branch to branch, is also a very pleasing composition; but the "Coast Storm," with its black rocks and white foam, is somewhat overdone in its harsh contrasts. The "Coast Calm," the calm that has come with daybreak and the rising sun, is far more pleasing. In "The Hay-field" the sky is over-heavily treated. It is an exaggeration of the French school in the sky treatment of its wood engravers. It is true that the haymakers are loading and carrying as fast as they can, yet, according to the skyey indications the weather was anything but propitious for hay-work, and the same observation may apply to "The Corn-field." The drawing and engraving of that subject are beautiful; but the black shadow that lowers over the copse, and the angrily heavy cloud-patches that disfigure the sky, indicate most unfavourable weather for reaping. Mr. Dell's heavy treatment of the skies, though very clever, is in fact a blemish more or less apparent in several of the pictures. This evident longing for powerful contrasts, however, comes out magnificently in "The Smithy," in which the opposition of the bright flash of fire-light to the deep massive shadows of the rest of the composition are capital. The work would hold its own in a portfolio of Rembrandt etchings; and "Skittles," with the Rembrandtesque bowl players, is equally good. "The Heath," with its spectral Firs, is striking and full of the true Turner spirit, but with an over-laboured sky; then comes "The Ducklings," a charming work, which might almost be signed "B. F." instead of "H. D." Its sweet rustic simplicity and the downy softness of the callow ducklings are really charming; but, strange to say, it lacks some of that force which is so superabundant in some of the other pictures, as for instance, in the exquisite subject called "The Lane," in which the contrast of light and shade are far too black and white, without sufficient gradation. "The Summer Kitchen" is a happily conceived title, and the old dame who sits boiling her pot, *al fresco*, in a half-wild orchard, forms with the adjuncts a most pleasing composition; combining softness, crispness, bright light, tender half tint and powerful depths of tone in a very masterly manner. Many of the other titles are equally well chosen, and carried into execution with equal cleverness. "The Path through the Wood," for instance, is not less apt, either in title or truthful delineation. "The Stream," which illustrates this notice, conveys in a similar way a most capital idea of one of our sweet meadow brooks, fringed with gloriously luxuriant weeds, and a higher growth of Hazel bush and pollards. In short this series of thirty "nature pictures" forms a delightful volume for the table at a time when we are shut out, or rather shut in, from the scenes themselves. Many a graceful hint might be culled from these charming pictures for the reproduction of some of their wild beauties in our pleasure-grounds; where the contrast of such picturesque and natural wildness with the more cultivated portions of the lawns, if successfully simulated, would have a piquancy by which unvarying high culture might be much heightened and improved.

H. N. H.

GLEANINGS FROM "L'ILLUSTRATION HORTICOLE," VOL. XIX.

WE find that of the two varieties of double white-flowered zonal Pelargoniums soon to be distributed, the one to be first sent out was obtained by a Mr. Smith, living near Toulouse, and is a sport from an old single white variety, named Beauty. The flowers are said to be of rather a greenish white, and to possess four or five rows of petals, not very regularly formed, so that this variety cannot in reality be

said to be much more than semi-double. The stock has been purchased from Mr. Smith by M. Boucharlat, senior, of Lyons, who is to send it out this month, at the somewhat high price of 30 francs (£1 4s. 2d.) a plant. The second variety has been raised from seed by the well-known French amateur, M. Jean Sisley; it came up among a number of other seedlings, the result of crossing a single white with pollen obtained from a double red; it is said to be of exactly the same colour as Madame Vancher, and also to exactly

Corbeny, so that now we may shortly expect doubles of every shade of colour.

Touching the germination of the seed of *Primula japonica*, M. Lemoine, of Nancy, gives the following curious experience:—"In July last I sowed seed of this *Primula* in four pans placed in a cool greenhouse; these pans were shortly after taken into a hothouse, and were there placed immediately under the glass, which, opening underneath, admitted the outer air day and night into the



The Stream.

resemble that variety in foliage and habit of growth. It will be sent out in March next by M. Alegatiere, of Lyons, to whom M. Jean Sisley entrusts the sending out of all his seedlings, at the much more moderate price of 12 francs (or 10s.) a plant. From the same batch of seedlings have also been obtained doubles of a buff, flesh-colour, and deep orange shade, from which something interesting may be expected. M. Crousse, of Nancy, has also raised a semi-double variety nearly white, with buff tips somewhat resembling Gloire de

house, so that the seeds, being only slightly covered, were kept moist, shaded, continually well ventilated, and in a temperature almost that of a hothouse, as too much air was never admitted. Under this treatment, at the end of twenty days, not a seed had germinated. I then decided to take one of the pans out into the garden and set it under a screen. Ten or twelve days after doing so, about fifty young plants appeared. Seeing this, I immediately placed the other three pans in the same position as the first; but not a single

grain has come up in them. Can it be that they were left twelve days too long in the hothouse?"

M. Riviere, writing to M. Duchatre a letter dated Hamma, Algeria, affirms a fact, hitherto doubtful, that the *Aracaria excelsa*, or Norfolk Island Pine, is decidedly monœcious. Carriere doubtfully affirms that the two sections of *Aracaria* (*Colymbia* and *Eutacta*) are diœcious, and Parlatore, in his *Prodromus*, vol. xvi., says they are rarely monœcious. M. Riviere, has, however, himself gathered male catkins and cones off the same tree, between 90 and 100 feet in height in the garden at Hamma.

An article from the pen of M. Carriere has recently been published in the *Revue Horticole*, describing that fine tree known either as *Polycarpa Maximowiczii* or *Idesia Polycarpa*, building his remarks principally on a dried specimen sent to the Paris Museum herbarium: this specimen bears fruit bunches or panicles, closely resembling in aspect those of *Schinus Molle*, and containing a tolerably large number of small spherical fruits, about the size of a wild Cherry. If, after this description we may be compelled to give up the idea of cultivating the *Idesia* in our orchards, we can always recommend it as a decorative tree of the first order, as remarkable for the beauty of its habit as for its large and handsome, heart-shaped foliage, which underneath is of a glaucous hue with purple sides and stalks; it is also perfectly hardy. Its discoverer, however, distinctly describes its fruits as being much esteemed in the western isles of Japan. We cannot, therefore, admit that a description from a dried specimen in a herbarium is sufficient to set aside the statements of an illustrious traveller.

W. E. G.

GARDEN DESTROYERS.

THE LEOPARD MOTH. (*ZEUZERA ESCULI*).

In our experience there are no insects found in the neighbourhood of London which are oftener sent to entomologists to name and report upon than the two chief members of the family of



Fig. 1.



Fig. 2.

Zeuzeridæ, the leopard moth and the goat moth. Their caterpillars feed on growing timber and make borings or excavations like mines or galleries in the stem or branches of trees. The caterpillar of the goat moth, which is the largest, naturally attacks the bigger timber, that is, the stems of grown-up trees, especially of the Poplar and Willow tribe. The caterpillar of the leopard moth prefers the branches, or if it attacks the stem, it is the stem of young trees. We have rarely met with it in wood thicker than a man's wrist or arm, but have found it in all thicknesses less than that down to twigs no thicker than a man's thumb or middle finger.

The caterpillar is represented in fig. 1. It is of a lovely uniform glistening maize-yellow colour, sometimes deeper and sometimes paler, bearing what appear black spots and a horny black plate on the segment behind the head, but which are in reality of a very deep purple or tawny port-colour so intense as to look black. It usually eats its way up the very centre of the branch which it inhabits, destroying the pith; but is also found in the solid wood away from the pith. Generally speaking if the gallery does not occupy the place of the pith it is close to the bark—the two places where the material which it consumes is softest. The above figure is of the natural size and the gallery fits it exactly, so that it appears an

impossibility for it to turn in it; but it is not so, for we have found it turn its head the other way when it chose, the softness and elasticity of the body enabling the one-half of the body to squeeze past the other.

In this country the Apple, Pear, Plane tree, and Elm are most subject to its ravages. It also attacks the Ash, the Service tree, the Lilac, the Privet, &c.; but, notwithstanding the name it bears, *Zeuzera* Esculi* (the *Zeuzera* of the Horse Chestnut), it is rarely found in that tree. In this country we have never met with it in it, nor has anyone else, so far as we can learn. Boisduval says the same thing, and notices that at the time Linnæus described it under this scientific name, the Horse Chestnut (which is an exotic, not introduced into Europe until the commencement of the seventeenth century), had probably not then been introduced into Sweden. But in Germany it probably does attack the Horse Chestnut, for there it has received the colloquial name of *Rosskastanien-spinner* and *Pferdekastanien-holzbohrer*. It is also called in Germany the *Linden-bohrer* and *Linden holz-spinner*, indicating that the Lime tree has also been observed by the common people to suffer from its attacks. Ratzburg only says that it is not found more in these trees than in any other, and adds to the number of those which it attacks the Birch, the Beech, the Mountain Ash, the Dog-wood, and *Alaternas*. Kollar, speaking of Austria, specifies the Elm and Walnut as suffering equally with the Apple and Pear.

When it gets into a plantation of trees which it likes, it spreads very rapidly. As an instance we may mention a number of young trees at South Kensington which were planted around the Museum some time ago. The leopard moth got a footing there, and the injury it did was very serious. A fine series of specimens of mischief taken from this source may be seen in one of the Horticultural Society's cases of Economic Entomology now exhibited in Bethnal Green Museum.

The caterpillar grows very slowly, taking three years to arrive at maturity. The egg is laid in July, hatched in August, and the larva changes its skin for the first time in September, but makes little progress until next spring. It then makes a start and attains its full size in June of the following year, when it passes into the chrysalis state. The gallery in which it lives is much encumbered with debris like sawdust, which is extruded in a moist state from a small exit hole in the bark, which often betrays the presence of the insect. The fading of the twig or branch in which it is feeding is however in general the first indication that draws attention to its presence, but the damp exudation from the hole shows that the living insect is within. The branch should then be cut off at a sufficient distance below this exit hole, for the gallery sometimes extends below it, and sometimes two caterpillars inhabit the same branch, like individuals in Paris or Edinburgh, living in different flats of the same tenement.

The caterpillar passes into the chrysalis state in the gallery under the bark close to the exit, which it appears to have previously enlarged. It is reddish-brown and has fine hooks or teeth on the back of the abdominal segments, which enable it to shift its position and to get out of the opening when the time for the perfect insect emerging draws near. After the moth has come out the empty chrysalis remains sticking out of the hole, where it naturally often attracts attention.

The perfect insect (fig. 2) emerges about the middle or end of July, the period varying a little in different individuals and in different seasons. It is semi-transparent, white with pale steel-blue spots, and the female is larger than the male. In this stage the insect does no direct damage. It does plenty of indirect damage by laying a considerable number of eggs, said by Ratzburg to be about 100 in number. These are round, about the size of "hail-shot," translucent, and of a pale orange colour. The female of this species, like all its allies, has a strong, round, hard ovipositor projecting from the abdomen, with which it pierces the bark of the trees in which it wishes to lay its eggs, and at same time deposits the egg in the hole so made.

The reader knows that no butterfly or moth can itself do

* Exception is also taken by purists to the generic name *Zeuzera*, which is understood to have originally been a misprint for *Zenzer*, the word intended by Latreille, who gave the name; but we would rather speak incorrectly and be understood, than speak more correctly and not be understood; so we stick to *Zeuzera*.

any direct damage. It is not the moth that frets the garment; it is the caterpillar from which the moth has sprung that does it. The jaws with which it did the mischief usually undergo a transformation in its metamorphosis into the moth, into what is called the tongue. They are elongated, flattened, curved, and soldered together into a tube (the tongue), through which the insect sucks up nectar from flowers or any liquid it fancies. But sometimes instead of being so enlarged and changed the jaws are diminished or atrophied altogether, and then we have the strange anomaly of an animal with a mouth and digestive organs, but with no means of putting food into them. This is the case with the family to which the *Zeuzera* belongs. In others the anomaly is carried still further—they have no mouth at all. Such an extreme case shows that it is not impossible for insects, when they have attained their perfect state, to survive without food until they have accomplished their sole remaining duty on earth, viz., the propagation of their species. If this must be the case with those which have no mouth, there is nothing unreasonable in extending the application of the principle to those which, although they have a mouth, have no means of taking food, and the probability that it is so with the leopard and goat moths is strengthened by the fact that these moths are thick and unwieldy creatures, and so fat that it is almost impossible to preserve them in our cabinets without their becoming greasy and disfiguring themselves, not to speak of the paper of the drawers or boxes in which they are placed, and it may be that they are thus provided with fat in order that they may be able, through it, to maintain life for the short period they have to live, by drawing nourishment from themselves, for we all know that animal life can be sustained, to a certain extent, and for a limited period, by this means. But here again we are met by the curious fact, which has been observed and recorded by more than one naturalist, that on one or two very rare occasions, when they have "sugared" trees, &c., to attract insects at night, some of those tongueless moths (the goat moth for example) have made their appearance, and settled on the sugared spot, as if to partake of the sweets spread for their enjoyment. It may, indeed, be, and in all probability is, the case that this abnormal appetite is a mere instance of the reappearance of a habit or disused function, analogous to reversion to type; and that it does not imply that the insect exhibiting it can in any way swallow down the food that has attracted it. It is impossible, too, to avoid the reflection that there are many thick-bodied, fat, and greasy moths which are not deprived of their tongue or sucking tube, an objection to which the reply is equally ready that, as nature often attains the same result by different means, so she can apply the same means to different purposes.

The family to which this species belongs (*Zeuzeridae*) occurs in greatest numbers in the Indo-Malayan region. Several species are known from India and the East Indian Archipelago, where some of them do mischief to the Coffee plantations. There are three species in North America exceedingly similar to those in Europe, and three in Britain—viz., the present species, the goat moth, and a species that feeds on reeds, passing its larval stage in their hollow stems. A. M.

Rats and Mice.—I have a kitchen garden contiguous on two sides to stables and farm buildings, the other sides being bounded by a stone wall, 12 feet high, the outside of the wall covered with Ivy. This garden is infested with rats and mice to such a degree that the cultivation of fruit and vegetables is almost impossible. Whole crops of Peas are devoured, Carrots and Beet-root share nearly the same fate. I have in vain set traps, and used every kind of poison. Would some of your correspondents kindly suggest means by which these pests may be removed, or, at least, reduced.—E. D. T.

Tobacco Juice v. Insects.—The French minister of finance has recently announced a schedule of prices for the juice which issues from tobacco during the process of manufacturing that article. The liquid thus obtained is of great utility in agriculture, and in the destruction of insects.

Vine Excrescences.—The excrescence on the Vine canes sent for opinion by Mr. Moffat Ball, Glen Uske, Carleton, near Newport, last month, has now been submitted to the Scientific Committee of the Royal Horticultural Society, who are of opinion that it is merely a hypertrophy of the cellular tissue, and that the appearance of coccus, which was visible, is only mould.—A. M.

THE KITCHEN GARDEN.

PARIS MARKET VEGETABLES AND THEIR CULTURE.

BY A PARIS MARKET GARDENER.

(Continued from p. 491.)

EGG PLANTS.

THESE are sown in January and February on a hot-bed. When the seedlings are sufficiently large they are transplanted into another hot-bed under glass. This bed is made of fermenting material covered with a layer of spent manure, and under each light from 200 to 300 plants may be set. At night they are covered with a straw mat. In May a third bed is got ready in the same way for the final transplantation. This bed is covered with frames or cloches; if frames are used, nine plants should be set quincunx-fashion under each light; if cloches, one plant is sufficient for each cloche. At the time of this final transplantation, frosts are no longer to be feared; the plants may be placed permanently on an old hot-bed where Carrots have been grown, or on a side-bed along a wall, in order that they may be well sheltered. Not more than five or six fruits should be retained on each plant; those on weak branches should be removed, and such shoots as would rob the fruit of sap should also be suppressed. Frequent watering and hoeing are necessary. There are two kinds of egg plants, one with round and one with long fruit, the colour of which is a purplish violet more or less intense. The fruit must be cooked before it is eaten, and it is generally accompanied with stuffing. The seed, when preserved and dried in the shade, will keep good for seven years.

BASIL.

This should be sown in March or April and the seedlings transplanted into a nursery-bed. In May or June they are planted out finally on old hot-beds or in the open ground, preserving the ball of each plant as entire as possible. Frequent watering is indispensable. The seed, which seldom ripens in our climate, keeps good for years. This plant is used for seasoning.

BEEF.

This should be sown in April or May, in drills or broadcast, in the open ground, well manured and deeply trenched. The young plants should be thinned out as soon as the leaves touch each other, leaving a distance of about 10 inches plant from plant. Use the hoe frequently between the rows. In October or November remove the leaves and pull up the roots, which should be placed in the store-room, to save them from the frost. Seeds of it gathered from two-year-old plants will keep good for five years. In order to obtain seed, some of the soundest roots are replanted early in spring, when they soon send up a stem, from which seed may be gathered in August or September. These seed-plants should be placed in a warm position with a south aspect and frequently watered.

BORAGE.

This is sown in spring in the open ground. In order to have a supply all the year round, sow in September, transplant in drills in October, and cover with lights or mats. A crop may be gathered in January or February. In January sow in the open ground and transplant into an old hot-bed. This plant is used for medicinal purposes; the flowers form a garnishing for salads and are eaten with them. The seed should be gathered a short time before it is ripe, and dried in the shade. It keeps good for three years.

AMERICAN SPINACH.

This should be sown in March, on a hot-bed or in some warm position, when frosts are no longer to be feared. The leaves are gathered like those of Spinach, and are used in the same way. The seed, which only ripens in the south, keeps good for three years.

NASTURTIUM.

This should be sown in April, at the bottom of a wall, or, better still, of a trellis with a warm aspect. It may also be sown in the open ground, but then it must be staked. The flower is edible, and is used for garnishing salads, to which it imparts an agreeably pungent flavour. The green fruit is pickled in vinegar. The seed is gathered in August, and

should be well dried before it is stored. It keeps good for five years.

CARDOONS.

These should be sown in April, on an old hot-bed, and the seedlings should be transplanted in May, at such a distance apart as will allow of their being afterwards removed with balls attached to them. Or they may be sown permanently, by dropping two or three seeds, at intervals of 32 inches, along two drills in each bed. The holes in which the seed is placed should be filled with spent manure. When the young plants come up, only the strongest one in each place should be retained. The intervening spaces may be utilised for some time by an inter-planting of Roman Lettuce and Chicory, as Cardoons grow very slowly. About the end of October they will have reached their full growth, and this is the time to blanch them. For this purpose the leaves should be raised up and tied together with straw ropes. As the plant is furnished with formidable spines, and its leaves spread very much, they should be raised in the following manner:—Two persons should hold a stick in one hand, and the end of a straw rope in the other. They should raise the leaves with the sticks and pass the straw rope under them. The rope should then be wound round the plant and fastened off. The leaves should be so completely bandaged that nothing but the ends can be seen. If the plants are to be blanched in the open ground, each plant should be surrounded with litter, kept together with a couple of turns of straw rope, and left in this condition for three weeks. At the first approach of frost they should be removed to the cellar, where they are kept during the winter. Plants intended for seed should be transplanted in winter to a warm position, and well covered with litter. In spring they should be uncovered and frequently watered. The flowers, which are similar to those of the Artichoke, soon make their appearance, and the seed is gathered in the same way as that of the Artichoke. It keeps good for seven years.

(To be continued.)

Queensland Carrots.—Among the numerous and beautiful varieties of Heath-like shrubs that clothe the granite ranges of Pikedale, I found a native Carrot—some roots of such size and shape that they would be no discredit to a market gardener's productions. The Carrot is a white variety; the flavour is the very same, it contains the bone in the centre, and is exactly the same as our garden Carrot, except the skin, which is dry and a little scaly. The leaves are of a dark green hue, and very delicate. Being past the growing season, the roots were all surmounted by a bare stem, which had shed its leaves, except a few at the top. Some of the plants appeared to be two or three years old, and strange to say, the roots did not appear to be spongy, or to contain any woody fibre. They grow in abundance in crevices in the granite rocks, in soil composed of decayed vegetable matter and granite. The greatest wonder is how they can survive without water, and under a scorching sun, for ten or twelve months at a time. From what I have seen of them, I think they might be worthy of a trial in our vegetable gardens.—WAYFARER, in *The Queenslander*.

NOTES AND QUESTIONS ON THE KITCHEN GARDEN.

Large Cabbages.—Mr. Rogers, Southampton, is at present exhibiting at his seed warehouse two Drumhead Cabbages, weighing together 104 lbs. These specimens were selected at random from several acres of heads equally large.

Broccoli in Winter.—To enable winter Broccoli to resist severe frost, it is an excellent plan to lift them partially with the spade and lay them down with their heads to the north. The check they receive in this way causes some change in the tissues, which enables the plants to resist severe frost. The lifting should be done before growth has entirely ceased.—J. S. W.

Chinese Vegetables.—Many of the Chinamen in California are excellent gardeners. Radishes, exhibited the other day by a celestial gardener, averaged 12 inches long and 3½ inches in diameter. They were very crisp, not strong, and a superior Radish. The Chinese cut them into convenient sizes, and dry what they do not have occasion to use green. Then they can cook them at any time. Chinese Cabbage is a plant of the Mustard species, resembling Lettuce, and used for a salad. Chinese Beans grow in pods a yard long, and are very crisp and tender.

Strong-growing Asparaguses.—Observing this season one of my three-year old Asparagus shoots towering up considerably above any of the others, I measured it and found it to be 8 feet 4 inches in height, and over 3 inches in circumference at the base. It had the appearance of a tree rather than an Asparagus shoot. There were three more roots in the bed, which produced shoots of the same description, but darker green than any of the others. In the cutting season I observed the Asparagus from these roots to be larger than others in the same beds, and slightly fluted.—T. W.

THE ARBORETUM.

THE PRUNING OF SHRUBBERIES.

This should be looked upon as being as important as the pruning of fruit trees. In some respects it is more so; for the root-pruning of fruit trees has to a great extent abolished the necessity for much head-pruning. Shrubs, however, as a rule, are not root-pruned. They are mostly planted thickly to produce immediate effect, and unless judiciously, and at least biennially pruned and thinned, they often run rapidly to ruin. Thinning should be the first form of pruning. This, however, prunes the roots more or less, and is attended with considerable risk of checking or injuring the plants that are left. Shrubberies are, indeed, often ruined by being thinned. The plants taken away are transplanted with huge balls, half of which consists of the roots of the permanent plants. Chiefly from this, and also partly from fresh exposure in a root-crippled condition, many shrubberies get a check that they never recover. The plants do not die; it takes a good deal to kill shrubs, but they live a stunted life ever after. It would be better than to run such risks to cut down the shrubs to the ground, and thus avoid the injurious root-pruning of those that remain. This beheading or removal is the first sort of pruning needed, but as the plants grow a similar process of reduction of size or number, or both, will have to be continued. At planting time it is a good plan to determine the character and style of the shrubbery desired. The material for forming shrubberies is rich and varied, and it is but seldom that the most is made of it either in planting or pruning.

Two general styles of planting prevail—the mixed and the grouped, and there is infinite variety and endless gradations of both styles to be found in different gardens. Mixed shrubberies, for instance, range between artistic mixtures and mere biggledly, piggledly, haphazard confusion, and grouping is perhaps more frequently ill than well carried out. There are likewise two general principles of pruning alike applicable to either style of planting. One I would venture to call the uniform block style, and the other, the multi-stature style. The former consists in thinning the plants or pruning the branches continuously, so that no plant injures or kills its neighbour, while all are allowed to grow up to their full statures. By such a system the shrubberies become nearly all of one height if mixed, or each group of nearly one uniform stature if unmixed. This mode has its advantages in affording shelter, the shutting out from view unsightly objects, and in massive and rich effects. In pruning masses of shrubs of this character, great care is needed to give breathing space to their bases. Otherwise they are sure to become bare at bottom, thus frustrating the object in view. The best method is to prune such shrubberies annually, if they are to be preserved perfect for many years.

The multi-stature style of pruning is equally applicable to the mixed or grouped methods of planting shrubs. It consists in the cutting down of many of the shrubs to different heights, from the ground upwards, and the leaving of others to acquire their full size and stature. The upper surface is thus an extremely varied one. The entire area is covered with shrubs, some almost on the ground, but others rising higher, and a goodly number standing up in full perfection, both as regards size and beauty. Shrubberies so treated are not dense masses of green or grey, of various hues or shades, but broken masses of light and shadow. Shrubberies, in short, treated in this way, may be pruned into the highest interest and beauty. The mass is there all the same, but its dead weight is removed by the endless variations of the sky line. Another advantage belonging to the multi-stature mode of pruning is that it adds to the apparent size of shrubberies. Prune on the block style, and the eye only runs over the outside. But on the other system the whole area may be revealed, except the outer boundary. In this way the shrubbery looks much larger than it really is—a point of considerable importance often in dressed grounds.

As to the best time for pruning evergreen shrubs, possibly if the shrubs themselves could be consulted, they would select June—the fall of the leaf for Hollies and others. The young shoots would also have time to mature their new growth before winter, a point of great importance. But the summer months are mostly too fully occupied with other work to allow time for pruning shrubberies; and where much of it is to be done I prefer November. Unless very severe winters follow sharp on the cutting, little harm is done by pruning evergreens then. Should the weather set in severe, lay a few of the cut branches over the stumps nearest the ground. These suffer most from cold. I scarcely ever remember seeing shrubs, even if newly pruned and beheaded, suffer, if the head reached a height of 6 feet. As to the extent to which pruning should be carried, that will depend upon circumstances; but often and little at a time is safest; besides we may have to prune for many purposes. Many shrubs, notably the Portugal Laurel, when they

reach nearly full stature, begin to put on a languishing appearance; less growth is made, and the leaves lose their dark green hue. When this occurs, the best remedy is a judicious pruning or cutting in of the head. This concentrates the growing force into a narrower area, and in consequence vigorous growth and green leaves return. These, again, act upon the distressed roots, and the health of the shrub is thoroughly re-established simply by means of pruning. Again, we prune often for form's sake, as well as for restoring health. There is no reason either as regards taste or the laws of beauty why every shrub or tree should be permitted to sprawl about at its own free will. A Holly tree, for instance, looks grandest as a massive not a slim pyramid. When standing alone it mostly assumes that shape. But it moreover not unfrequently sprawl; the side branches become lanky, rival leaders are pushed forth, &c. Now it is one of the legitimate results of judicious pruning to correct those unusual if not unnatural developments. Not always, however, but in certain places and positions. Hollies are often wonderfully improved by foreshortening the side shoots. This thickens and strengthens them; and as the season for Holly is near at hand, I would suggest that the wants of the decorator for variegated Holly, always urgent, should be met by this system of foreshortening, instead of by the slashing off of noble boughs, and sometimes entire plants, as is too often done. This system of foreshortening is equally applicable to green Hollies, Box, Yews, Laurels, Laurustinus, and indeed to many other evergreens.

D. T. FISH.

WEeping TREES.

THE WEeping SOPHORA.

There are many fine weeping trees in our gardens now, but none more beautiful than this. It is seldom seen, however, and rarely in a well developed state. Our illustration shows the wintry aspect of



Weeping Japanese Sophora.

the tree, which is almost as attractive as the summer one. The weeping Sophora loves a warm free loam and all the sun it can get with us, and it does not fear drought. It is a capital tree for a lawn, and being of comparatively small size, it is well suited for planting in the neighbourhood of dwellings. Its branches curve gently and gracefully to the ground, like those of a Weeping Ash; but much closer and thicker, and when fully clothed with leaves nearly rain-proof. As an arbour, therefore, or covering for a rustic seat, few weeping trees are better fitted.

Aged Conifers.—At Denney Abbey, an old place near Cambridge, there is a Monterey Cypress (*Cupressus macrocarpa*) about 20 feet in height, and 18 feet in diameter; also an American Arbor-vitæ (*Thuja occidentalis*) reclining on the lawn, a very aged tree, much branched, and about 18 yards through, though not much more than 20 feet in height. At this place there is, moreover, a Red Cedar much mutilated, and, therefore, not very handsome, but very old. I may add that cut on the sill of one of the windows of the abbey is the date 1671.—J. CHATBE.

PUBLIC GARDENS.

OUR NATIONAL HERBARIUM.

A PUBLIC or national herbarium, if put to its proper uses, and visited by botanists for the purpose of examination and study, is likely to be known to them. They would know, at least, whether any obstacle interfered with their use of it. If the head of a competing museum deposes before a "Royal Commission on Scientific Instruction," inquiring as to such alleged obstacles, that "he does not think any person can answer except the officers," the Commission would draw the desired conclusion. Similarly if, in his reply, the respondent reiterated his belief that the nature and extent of the botanical collections, or their condition, were not well known, except to its officers, the Commissioners might draw the inference that few or no other persons visited such national herbarium.

The practice of the Royal Commission was to receive from the witness a precis of the points on which he desired to be questioned. Now, both the Q. 6,661 and the reply were calculated to convey the impression that the Botanical Department in the British Museum was unvisited for the purposes of study. Its officers felt deeply the insinuation, and through their chief, gave long and circumstantial evidence of the names and repute of the botanists who had so frequently and so closely studied the herbarium as to be able to give trustworthy evidence of its nature, extent, condition, and the absence of any obstacle to their full and satisfactory use of it. An instructive portion of the Botanical Department is open to the public, and any of your readers who may visit these rooms can form their own opinion of the condition, arrangement, and instructiveness of the exhibited specimens.

It seems an odd obtuseness of mind to suppose that any special information could be needed to discern the insinuation conveyed by Dr. Hooker's reply to Q. 6,661, and a still stranger callousness in the respondent not to be himself conscious of it; more especially as the Commission would be influenced not merely by the evidence that did appear in print, but by that, reflecting on Robert Brown, which Dr. Hooker prudently requested might not be printed.

Sheen Lodge.

RICHARD OWEN.

A GIGANTIC PARK.

By an Act of Congress of March, 1872, a district about half the size of Wales, and 1,000 square miles larger than the largest Swiss Canton, was "dedicated and set apart as a public park or pleasuring ground for the benefit and enjoyment of the people." It is forbidden that anyone shall hereafter settle upon or enclose any part of the immense area thus set apart, and only such buildings can be erected upon it as the Secretary of the Interior may deem conducive to the accommodation and comfort of the visitors.

The estimated extent of the district thus set apart is 3,575 square miles, and coincides to a large extent with the area contained between the 110th and 111th degree of W. long., and the 44th and 45th parallels of N. lat. the whole district forming very nearly a square, and looking on the map like a huge slice out of one of the most mountainous parts of Switzerland. One of the heights, Mount Washburne, is 10,575 feet above sea level, and even the lowest part toward the south, containing the basin of Yellowstone Lake (330 square miles in area), "one of the most beautiful lakes in the world," is about 7,000 feet above the sea. Besides the huge mountains that form the most prominent features of this region, the beautiful lake just mentioned, and a large part of the upper courses of the picturesque Yellowstone and other rivers, the district embraces some of the most remarkable natural phenomena that are to be seen in any part of the world—wonderful falls, multitudes of hot springs, steam springs, mud geysers, mud puffs, water geysers, some of them rising to a height of 200 feet, and other objects of interest. This whole region was, in comparatively modern geological times, the scene of wonderful volcanic activity. The hot springs, geysers, &c., represent the last stages, the vents or escape pipes, of these remarkable volcanic manifestations. All these hot springs are adorned with decorations more beautiful than human art ever conceived, and which have required thousands of years for the hand of Nature to form. The geysers of Iceland sink into insignificance in comparison with the hot springs of the Yellowstone and Fire-hole basin. No portion of this tract could ever be made available for mining or agricultural purposes. The mountains that wall it in on every side form one of the most remarkable watersheds on the continent, and from whatever point of view we survey this singular region, it is unsurpassed in interest. Several exploring parties have lately visited the district, and from an account of one of these, under Mr. F. V. Hayden, U.S. Geologist, the following description of some of the most remarkable phenomena has been condensed. Nine-tenths of

the area is covered with volcanic material in some form. In the Yellowstone valley, as in the valleys of all the streams of the West, there is a chain of lake basins that must have existed during the Pliocene period. There was a continuous chain of these lakes of greater or less size to the source of the river; thence it expanded into an immense double lake, of which only a remnant—Yellowstone Lake—now remains. This lake was once much larger than at present, and it was partially connected with another lake about thirty miles long and twenty wide, which terminated at the Grand Canon, at the upper falls of the Yellowstone. The term Yellowstone Basin is sometimes applied to the entire valley; but the basin proper comprises only that portion enclosed within the remarkable ranges of mountains which give origin to the waters of the Yellowstone, south of Mount Washburne and the Grand Canon. This basin is about 40 miles in length from north to south, and on an average 30 miles in width from east to west. It might be called the vast crater of an ancient volcano made up of thousands of smaller rents and fissures, out of which the fluid interior of the earth, fragments of rocks, and volcanic dust have been erupted in unlimited quantities. Hundreds of the nuclei or cones of these volcanic rents are now remaining, some of them rising to a height of nearly 11,000 feet above the sea. Indeed, as has been said, the hot springs and geysers of this region are only the closing stages of that wonderful period of volcanic action which began in Tertiary times. Even at the present time there are connected with these manifestations of internal heat earthquake phenomena which are well worthy of attention. Earthquake shocks are not uncommon, and are at some seasons of the year very severe.

Yellowstone Lake itself has at all seasons nearly the temperature of cold spring water, and its area is gradually but very slowly diminishing. Mr. Hayden estimates that, since the period of volcanic activity, the depth of the lake has been about 500 feet greater than at present, the shore line having then been high up on the sides of the surrounding mountains. Warm springs are not uncommon in the valley of the lower Yellowstone, but the temperature is seldom higher than 60° or 80°. It is not until we reach Gardiner's River, a small branch flowing into the Yellowstone on the left side, opposite the third canon, that the true hot springs commence in their full force. About three miles above its junction with the Yellowstone, the valley bottom is covered with a thick calcareous crust, the deposits of hot springs which are now extinct; but flowing swiftly from beneath this crust is a stream of hot water 6 feet wide and 2 feet deep, with a temperature of 132°. A little distance farther up is a high hill, on the slope of which has been formed a system of terraces, each from 200 feet to 300 feet in height, and covered with a thick deposit of lime. On the ascent of the hill, about three-fourths of a mile from the river bottom, there is to be met with one of the most remarkable exhibitions of hot spring deposits. In the distance it looks like a vast glacier of snow and ice, on which account it has been named the White Mountain. Indeed the different terraces can be compared, for their wonderful beauty, only to a frozen cascade. The remains of once active springs are plainly visible; old chimneys, irregular openings, like entrances to caverns, which extend beneath the crust, are numerous. This crust is probably from 20 feet to 50 feet in thickness, and underneath it is supposed that the surplus water from the active springs above flows down to the river. A little further up is a series of basin-like pools, from 4 feet to 8 feet in diameter, and on a terrace about 200 feet farther still are numbers of active springs, with basins 20 feet to 50 feet in diameter, some of them with several centres of violent ebullition in the same basin.

The temperature at the outflow varies from 150° to 162°. Upon the terrace, down about midway on the side of the mountain covered with this deposit, the principal active springs are now located, and here is presented another picture to the eye which transcends any description in words. The water is perfectly transparent, and down in the clear depths can be seen distinctly the minutest ornament upon the inner sides of the basin; and the exquisite beauty of the colouring and the variety of forms baffle any attempt to portray them, either with pen or pencil. These springs also are full of a kind of vegetation, which, under the microscope, proves to be composed of diatoms, among which Dr. Billings discovered *Palmella* and *Oscillaria*. There are also in the quiet springs, and in the little springs that flow from the boiling springs, great quantities of a fibrous, silky substance, apparently vegetable, which vibrates at the slightest movement of the water, and has the appearance of cashmere wool of the finest quality. There are two classes of springs in the Yellowstone valley, one in which lime predominates, in the other silica. They may be divided again into intermittent, boiling and spouting, and quiet springs. Those of the first class are always above boiling point during the period of action, but during the interval the temperature lowers to 150°. Those of the second are

always at the boiling point, and some of them throw the water up 2 feet to 6 feet by regular pulsations. The springs of the third class may have once been geysers, but are now quiet, and have a wide range of temperature, from 188° to 80°. Where the temperature is reduced below 150°, great quantities of the sesquioxide of iron are deposited by the water, lining the inside of the funnel, and covering the surface where the water flows. Taken in the aggregate, these springs have been in constant operation during our present period, and Mr. Hayden estimates that under favourable circumstances, at least 6 feet of this deposit have been precipitated within the space of one century.

We must omit an account of the basaltic columns in the canons of the Yellowstone and Gardiner's river, and of the great canons, falls, cascades, and other wonders of this unique region, and pass to the hot springs of the upper basin. A few springs are seen at the mouth of Tower Creek, at the lower end of the Grand Canon; but it is not until we pass the range of mountains which forms the north wall of the upper basin, about twenty miles above the lake, that the great hot spring district of the Yellowstone commences. There is here an area, within the drainage of the Yellowstone, forty miles in length, and on an average fifteen miles in width, that either is at the present time, or has been in the past, occupied by hot springs. The old deposits cover the region, and here and there are groups of active springs—mere remnants of what formerly existed. The Grand Canon is a deep channel 1,000 feet to 1,500 feet in depth, carved out of the basaltic rocks and hot spring deposits, and on the sides of the walls may be seen the irregular fissures which communicate from the surface with the heated interior. Resting upon an irregular surface of basalt are immense deposits of silica of all colours. Much of the deposit is as white as snow. On the west flank of Mount Washburne, in the north of the area, there is a remarkable group of springs, in a constant state of action at the present time. Alum, sulphur, soda, and common salt, are found upon the surface in considerable quantities. Sulphuretted hydrogen is emitted from the springs in such quantities as to fill the air, rendering it oppressive with sulphurous odour. This group extends across the Yellowstone to the eastward for several miles. The springs, which are now in active operation, are only a few out of hundreds which once covered the entire area, but which are now dead or dying out.

Two remarkable groups of sulphur and mud springs deserve particular mention. The largest group is found on the east side of the Yellowstone, at Crater Hills, eight miles below the lake. This district covers an area of about half a mile square, and is sometimes called the "Seven Hills," from the fact that there are here seven mounds of siliceous deposits from extinct springs, varying in height from 50 feet to 150 feet. The old craters of dead and dying springs, and the immense quantity of the siliceous deposits, show that the present active springs represent only the last stages of what must have been at some period in the past a magnificent group. There are still numerous steam-jets, one of which, on the west side, produces a sound like that of a locomotive, which can be heard for a long distance. The surface is fairly riddled with little steam vents, and the crust sends forth a hollow sound beneath the tread; on removing this shelly covering at any point, hot vapours come forth, while its under surface is encrusted with the most beautiful crystals of sulphur. The springs at this point are either boiling, mud, or quiet springs. The principal boiling spring, which is in a constant state of ebullition, sends up a column of water 2 feet to 4 feet high; has a basin about 15 feet in diameter, and gives forth such a column of steam that it cannot be approached except on the windward side. But perhaps the most interesting objects here are the mud springs, which are of every size, from an inch in diameter to 20 feet. One of the largest is filled with fine light brown mud, which is in a constant state of agitation, the surface covered all over with puffs like hasty pudding. Others send forth a thud-like noise every second, with an impulse at long intervals that throws the mud up several feet. The water in the vicinity, as well as the mud, seems to be thoroughly impregnated with alum. In an adjoining valley are little mud or turbid water vents, which keep up a simmering noise, showing the nature of the earth beneath the crust.

Two miles above, on the same side of the Yellowstone, is the other group of springs, similar to those just noticed. Besides these are the geysers, to be alluded to presently. One of these is a true intermittent spring, and throws up a column of water 10 feet in diameter, from 15 to 30 feet high. The crater becomes filled with boiling water; suddenly immense columns of steam shoot up with a rumbling noise, the water overflows the basin, another column of water is thrown up for the space of ten or fifteen minutes, when it quiets down, and the basin is nearly empty. This operation seems to be performed about eight times in twenty-six hours. Upon the side of the hill bordering the river is one of the most terrific mud-

cauldrons seen by Mr. Hayden during his visit. A large column of steam is constantly ascending, 500 feet or more, from a deep funnel-shaped basin, 25 feet in diameter; when the wind carries away the steam for a moment, the thin, black mud may be seen 25 feet below the rim in the most violent state of agitation, with a noise like distant thunder.

THE AILANTUS SILKWORM.

THOSE who have kept the ordinary Mulberry silkworm will find great pleasure in rearing this; and to such as may still be unacquainted with it the following directions as to its management may be of service:—It is much larger than the common Mulberry silkworm, and the colours during the various changes of its skin far more beautiful. The silk obtained from the cocoon is also superior in every way to that of the ordinary silkworm. Although it will eat many kinds of leaves, such as Plum, Acacia, &c., yet those of the Ailantus suit it best. Eggs of this fine silkworm (which are double the size of those of the Mulberry worm) may be purchased by the hundred, but a dozen or two will be quite enough to commence with by way of experiment. Sufficient Ailantus leaves for these may be procured at any florist's for a few pence. If there be a larger quantity of eggs, a greater number of leaves will be required, for the worms are ravenous eaters.

Having purchased the eggs, say in the beginning of summer, place them in the sun, on a piece of blotting paper, and cover them with an inverted wineglass. Make a cap of writing paper as a shade to cover the glass, and keep the blotting paper always moist, so that the eggs may not dry up. In a few days, according to the heat of the weather, the eggs will be hatched, and the little silkworms will immediately crawl to the top of the glass. When first out of the eggs, they will not eat for some hours. If all the caterpillars should not come out at once, procure another wineglass, and insert it, as before, over those still to be hatched. Set the wineglass in which the young silkworms are upright, then lay an Ailantus leaf (a very young one) across the top of the glass, and place over that, to prevent its blowing away, a card or weight of some kind. The young silkworms will again crawl upward, and thus find the leaf. This prevents the necessity of touching the caterpillars to put them on the leaf, which would kill them. Having once found their food, there will be no fear of their roaming any more. Coverings or boxes with lids are not required, for the caterpillars are very lazy and immovable, if only they have enough to eat, and they will not quit the leaves as long as these remain in a fresh condition. A very good mode of keeping the leaves fresh for a day, and even longer, is to procure an empty pomade or pickle bottle, with a bung, of which there are generally one or two at hand in most families. Fill the bottle with water, bore a hole through the cork, and insert the stalks of the leaves, permitting them to reach the water. By means of two bottles a constant succession of fresh leaves may thus be provided, and the caterpillars will transfer themselves to their new food of their own accord. It is necessary, however, to place the new bottle close beside the old one, and in such a manner that the leaves may touch one another. Remember also that the caterpillars always crawl upwards when in search of new food. Therefore the new bottle should be raised slightly above the level of the old one.

When the worms have changed their skins four times, and are about six weeks old from the hatching of the eggs, the full development is attained, and they commence spinning their cocoons, an operation done in one continuous thread. If the silk is wanted it may therefore be wound off at once, by holding the cocoons over the steam of a basin of boiling water in order to dissolve the gum, or if not required for the silk, the cocoons may be kept in a cool, dry, airy position till the following year. When warm weather sets in the worms will issue from the cocoons in the form of beautiful moths, with wings gorgeously marked, and then lay their eggs. If there should be a small Ailantus tree in the garden, there will be no trouble whatever in rearing such worms. In that case, all that is required is to take the leaf on which the young caterpillars are and pin it underneath one of the leaves on the tree, choosing a tender young shoot for the purpose. In an hour or so this may be unpinned, and it will be found that the silkworms have crawled under the leaves of the Ailantus tree, and are clinging to the leaf veins. In this position they are secure from the sun, rain, and wind, which however do them no harm whatever, but rather invigorate them. The cocoons are mostly formed at the tips of the branches and remain there in safety throughout the winter. Birds are very fond of this silkworm, and will occasionally make off with a few. To prevent this some thin gauze netting must be fixed over the Ailantus tree at a little distance from it.

F. H. B.

Vegetation in Honolulu.—The city of Honolulu, one of the Hawaiian Islands, stands upon the edge of a large plain. The scenery around it is very attractive. Back of it are quiet valleys, dotted by white cottages and inclosed by sharp mountains, whose peaks are always softened by tender grey mists, screening the splendour of the sun as it falls upon slopes and precipices that are coloured by Ferns and grasses, and forests of bright green Kukui trees, and ridges of black lava, and patches of sombre red soil that have been laid bare by the trade-winds. Near by stand, like sentinels, the lofty stumps of two volcanoes, whose constant presence is solemn and impressive. Herds of goats and cows are now browsing on their corrugated sides. In front is the sea, stretching away below the equator; the surf always breaking on the coral reefs. Ships bound to China or coming from Australia show their flags to the city, as they sail by outside the reefs. The city is laid out in tolerably good streets, which are prettily shaded by trees transplanted from all parts of the tropical world. There are various Pines from Norfolk Island and New Caledonia; the Papaw, Kamani, and Breadfruit trees from Tahiti; the Tamarind, Mango and Samarang (or Monkey-pod) from the East Indies; the Algeroba from Mexico; the Rubber tree from South America; the Hibiscus (or China Rose tree) from China, in flower all the year round; Peach trees, Oleanders, Bananas, Guavas, Orange, Citron, and the Koa. Under the shelter of this evergreen foliage stand pleasant cottages, some of them built of coral blocks, some of wood with New England blinds and trimmings; all surrounded by broad verandahs, over which stretch lattices of flowering vines. The doors are always open, and the welcome is always hearty, especially to strangers. In the verandah where my hammock swings, the thermometer marks 70° at sunrise, 76° at noon, and 78° and 80° in the afternoon. A cooling breeze comes down the valley gorges, above is a blue summer sky; and this is the month of February, in which I have been picking Roses and Strawberries, in defiance of all the established facts of an orthodox life!—R.

Vegetation in Queensland.—This is a country in which trees are not planted only for posterity to enjoy. I have just been picking Oranges and Lemons by the hundred off a few trees which had no existence when I was here in 1867, and a Poinciana regia, which is now a fine shady tree more than 20 feet in height, was planted as a seed only four years ago.—*Correspondent of Globe.*

MY GARDEN.

A LITTLE Loudon garden, full
Of little cares and common flowers;
Its gentle changes never dull,
Lend fleetness to the lazy hours.
I boast no Rose; my double Stocks
Come single: half my borders died.
Why weep the loss? I've tiles for Box,
And quite a shower of London Pride.

Rare aliens, palaced past my hope,
I gaze on ye without regret,
And leave my Lady Heliotrope,
To kiss my humbler Mignonette!
Wallflowers, shake your tawny heads—
Your velvet heads deep-stained with wine!
Of all the tribe that incense sheds,
You're nearest to this heart of mine,
Behold my neighbours, south and west,
They proudly vaunt their floral lore,
And lovingly each does his best
With Jasmine, Woodbine, Sycamore,
To greenly roof his one retreat
From city duties hard and dense,
Where, wearied sore of mart and street,
He findeth rest and recompense.

When iron Winter's foot is set
On all the brooks, and chill's the breeze—
When, jewels in an ebon net,
Unnumbered stars stir 'mong the trees—
I look out from a fire-lit room,
And pace in thought my garden round,
Where, moving in the elvish gloom,
Fantastic shadows throng the ground.

And when my neighbours fly the town,
In Fashion's cause condemned to roam
Ou fragrant beach and bracing down,
And I am left alone at home,
I doze and dream of tarns and hills—
My holiday in miraged bliss!—
I wake—content my fancy fills:
Thank God for such a nook as this!

Byron Webber, in Cassell's Magazine.

THE GARDEN IN THE HOUSE.

CULTURE OF PLANTS IN ROOMS.

(Continued from p. 468.)

THE FORCING OF SHRUBS.

THIS operation is commenced sometimes early after the first frost appears, sometimes from the beginning of December, and sometimes not till the beginning of January. The time depends partly on the kind of plant to be forced, and partly on the time at which it is desired the plants should bloom. When the forcing is to be commenced, the plants are removed from their winter quarters, and all the old leaves and decayed or superfluous shoots are cut off. Any plants that are weakly, and have not made a good strong growth, should be left where they are, and may be grown on in the following summer for forcing the next winter. The plants which have had their useless shoots and old leaves removed should then be well watered, and placed in a room where the temperature is from 36° to 40° Fahr., in a sunny position. When, under the influence of such a position, and regular watering as often as the ball becomes dry, the buds begin to swell, those plants which can endure the temperature of the warm room may be removed into it. Here they should be placed in a position near the window, as much exposed to the sun as possible, and until they bloom are treated just like other room-plants. After blooming they may be brought back to the cool room, and kept there until the time arrives for placing them in the open air. All the shrubs recommended for forcing cannot be brought under the high temperature of a heated room with advantage to their bloom. These should therefore either be kept in a room sheltered from frost, where they will develop their bloom, provided that the temperature is kept up to from 36° to 43° Fahr., and the plants are placed in a position where they will receive the sunshine, or they may be brought into an apartment which is usually not heated, but whose temperature, from its proximity to a heated room, is kept up to from 38° to 43° Fahr. Liquid manure need not be given, as the bloom will be supported by the nutriment already stored up in the body of the plant. This is evident from the fact that shoots of the Bird Cherry or of the common Syringa will bloom if cut off and placed in plain water. The plants which have been forced should be cut back and transplanted when replaced in the open air in spring. For the most part they do not in one year grow sufficiently strong for a second forcing in the following winter. Therefore they should be kept through the following winter in a cellar or other place safe from frost, and only used for a second forcing after careful culture during the next summer, so that two years may intervene between the first and second forcing. If the amateur possesses a garden, the best thing for him to do is to plant out in the open ground the subjects which have been forced for the summer after their forcing. He should place them in good soil and in a sunny position, and attend to them carefully throughout the summer, and in the following spring, or the spring after, they may be repotted for future forcing. To one important point we shall here again call attention, viz., that it is indispensable that the plants intended for forcing should not be removed to their winter quarters before they have endured some frost, and that the forcing should be gradual, beginning with a temperature of from 33° to 36° Fahr., which is only to be increased when, under the influence of the low temperature and the moisture of the soil, the plants have commenced their new growth. Plants which are removed from their winter quarters at once into the warm room generally lose their flower-buds and produce nothing but leaves.—*E. Regel.*

(To be continued.)

ALOCASIA METALLICA.

THIS is one of the most noble and attractive plants that has been recently introduced, and one which for decoration indoors has few equals, especially when set in an ornamental vase or pot. Its magnificent shining bronzy leaves, so distinct from those of plants in general, render it a universal favourite. Even the most select collection is incomplete without it. It

has this advantage too, that even in a small state, with only four or five leaves on it, it exhibits its true character, or it may be grown if desired to even six or eight feet in diameter. To grow it well it should be accommodated during its season of growth with a night temperature of 70° with a rise of 10° or 15° during the day, and diligently but not heavily shaded from the sun, keeping it as near the glass as convenient. The plant is a surface rooter, the roots seldom penetrating deep into the pot, which should, in the case of small plants, be half filled with crocks. Large pots, say 15 or 20 inches, should be three-fifths filled with drainage. The material required to grow it well should consist of three parts fibrous peat, two parts chopped sphagnum, and one part small potshreds and clean sand; incorporate the whole well together and press the soil moderately firm but not too hard amongst the roots. If the sphagnum is green it will be found to be all the better. This *Alocasia* is a thirsty subject, and if a close retentive soil is used the roots are apt to rot. It requires repotting every year about March or April, removing all the old soil that is getting in any way sour or close. Young plants of it will require a shift twice in the growing season, using 3 or 4 inches larger pots than those they occupied on each occasion. The plant is liable to the attacks of red spider; but from the even smooth character of its leaves this pest is easily prevented from establishing itself by a good application of the syringe every afternoon during the growing season.



Alocasia metallica as an indoor ornament.

During winter give less water at the root than in summer, but never allow the soil to become dry. The plant is a true Aroid, and before it begins to grow in spring it throws up quantities of flowers; these are not in the least attractive, and they should, therefore, be removed as soon as they appear, as they only tend to weaken the plant. It can be increased by division of the crowns; it also forms small bulbs at the root, which at the time of potting should be removed, and potted singly in small pots, using soil such as has already been described.

T. BAINES.

Leptopteris superba.—It is now a few years since that wonderfully graceful New Zealand Fern, *Leptopteris superba*, first made its appearance at our flower shows. Everybody was charmed with it. When those little semi-pellucid and erect subdivisions are each tipped with a tiny drop of dew there is nothing, even in the way of the very rare tropical filmy Ferns, that surpasses it in beauty. It was at first considered difficult to cultivate, or at all events great care was taken of it, and it is now almost invariably grown under a bell-glass. It was rare at first, but now young plants are not difficult to obtain. In visiting a friend the other day, we were surprised to find several plants of it growing most healthfully in his sitting room; they looked as fresh as young plants of fennel in spring. Given a young plant of *Leptopteris superba*, a pan of some kind presentable in a sitting room, a little peat soil and silver sand, and a few crocks, broken clinkers, &c.; put these last in the bottom, not to do their usual work, for there need be no drainage from the pan, but simply to form a sort of receptacle into which the surplus water may fall from direct con-

tact with the roots; plant the specimen in the centre, raising the soil towards that point, and making it a little rough with a few bits of sandstone, &c., put on the glass—and the thing is done. The result will be one of the most beautiful objects ever seen in garden or in wild. Every tip of the finely divided frond will have its little pearl of dew; and when this ceases to be the case it is time to water again—a labour of once in six months or less. These filmy Ferns, that naturally grow in still and very moist places, are, above all others, those most suitable to indoor cultivation, no ventilation, no complication of any kind being necessary.

GARDENING ROUND LONDON.

(DURING THE PRESENT WEEK.)

BY OUR SPECIAL REPORTER.

PRIVATE GARDENS.

The Flower Garden.—Christmas Roses, Pansies, a few *Chrysanthemums*, *Laurustinuses*, and some other miscellaneous flowers yet enliven our outdoor gardens with a few stray blossoms; but, as a rule, this month is one of the duller of the whole year as regards flowers. As to operations little is being done except sweeping and cleaning. Deciduous trees and shrubs are being thinned and pruned, and some of them rooted out. Alterations of all kinds continue to be effected, and any portions of the flower garden, if empty, not already dug over, are dug up as roughly as possible, in order that the soil may be acted on by forthcoming frosts. *Fuchsia Riccartoni* and *gracilis* are cut over a few inches above ground and a layer of leaves 4 or 6 inches in thickness is laid over their roots and held in position by means of the cut branches which are laid over them. Tree *Pæonias* are protected by means of a slight wooden framework erected over them in such a way that mats may be placed over the frames in the event of frost. *Chamerops Fortunei* is afforded similar protection, as are also the all but hardy *Bamboos* and *Yuccas*. *Myrtles* trained against walls are likewise afforded protection; for although some winters they stand uninjured, they are completely killed to the ground by others. Over *Canna* roots left out of doors some leaves are placed, on the top of which the dead stalks are laid, and fixed so as to prevent their getting displaced. Rice paper plants have in most cases been lifted, potted, and placed under stages in cool airy houses; *Aralia Sieboldii* is, however, left out of doors, where, if in a sheltered position, it withstands ordinary winters with impunity. A mulching of leaves is put round *Pampas Grass*, and held in its place by means of small branches. A mulching, generally of litter, is also placed over the roots of the finer *Roses* and *Clematis*, but care is taken to keep the mulching from touching the stems of the plants so protected. Choice alpine and herbaceous plants are, as a rule, kept in frames until March. If they must necessarily be wintered in the open ground a branch or two may be fixed over them, and covered with fern if severe weather sets in. In the case of standard *Roses* their heads should if necessary be protected with thin pieces of broom, which is the best of all materials for that purpose, and in many instances most easily obtained.

Bedding Plants.—To *Geraniums* in frames is given plenty of air, and they are protected at night from frost by mats or litter strewed over the sashes. Damp, if present, is checked by means of dry wood ashes being scattered amongst them, keeping the inside of the frames and the roots of the plants as dry as possible. Although a degree or two of frost should enter the frame, if all is dry no injury is sustained. Where there is sufficient room in greenhouses for wintering *Pelargoniums*, *Verbenas*, *Heliotropes*, *Lobelias*, &c., and even *Calceolarias* and *Gazanias* grown in boxes, they are stowed therein, and kept near the glass. *Calceolarias* and *Gazanias*, however, are commonly wintered in cold frames, and are only protected from frost with litter, fern, mats, or straw-thatched wooden covers. Tarf frames are better than wooden ones for them, especially for old plants. Sub-tropical, perennial, and biennial plants are wintered in the warmest part of the conservatory or greenhouse, or the coolest end of the stove. *Coleuses*, *Alternantheras*, *Iresines*, *Solanums*, &c., are always best so treated. The almost hardy variegated *Mesembryanthemum cordifolium* always does best when wintered in a temperature not under 45°, and produces cuttings much more freely in spring than when less kindly treated.

Conservatories.—These are now gay with contributions from the forcing house, amongst which may be named *Roman Hyacinths*, *Tulips*, *Crocuses*, *Snowdrops*, *Cinerarias*, *Lily of the Valley*, *Azaleas*, *Camellias*, *Laurustinuses*, *Lilacs*, and other plants of a miscellaneous character. Amongst plants naturally in flower in conservatories at present are zonal *Pelargoniums* raised from cuttings in May and June, and early flowered plants that were cut back in July and kept dry for a time, then shaken out of their pots, repotted, and grown on gradually. Heaths of many sorts, *Croweas*,

Monochætamns, *Leschenaultias*, some *Acacias*, *Tremandras*, *Veronicas* of sorts, *Cyclamens*, Chinese *Primulas*, and many others are also now in bloom. As auxiliaries to all these may be added the many lovely *Orchids* now in flower, especially *Odontoglossums*. *Tropæolums* of the tricolorum type are being trained every second or third day, for if left too long untrained they are frequently broken during the operation. Weak manure water is applied to those that have made good growth. *Humeas* are kept near the glass in houses where the temperature does not fall below 40° during winter; they are liberally watered. *Cinerarias* and *Calceolarias* are kept in cool and airy pits, and in a growing condition. *Daturas*, *Erythrinæ*, and similar plants are cut down and stored in some dry corner of the greenhouse.

Stoves.—These are now daily improving as regards floral beauty, flowers being more abundant than they were some weeks ago. Amongst them are the different varieties of *Epiphyllum*, *Tradescantia*, *Aphelandra*, *Rondeletia*, *Amaryllis*, *Eucharis*, *Poinsettia*, and *Mussaenda*; also *Euphorbia jacquiniæiflora*, *Thrysanthus rutilans*, *Jasminum Sambac*, *Russelia juncea*, *Plumbago rosea*, *Ipomæa Horsfalliæ*, *Batatus campanulatus*, and a few others. These, when skilfully intermixed with fine foliated plants, produce a charming effect. The floral display is also greatly assisted by means of *Dendrobiums*, *Saccolabiums*, *Cattleyas*, *Lælias*, and other plants from the *Orchid house*. Washing plants with soap and water and sponge is now more vigorously carried out than at any other season, for every insect now destroyed saves an immensity of work in spring. A temperature of from 60° to 64° is maintained in stoves throughout the night, and a slight rise is allowed in the daytime. Palms and other evergreen plants are kept moderately moist. Deciduous shrubs, such as *Lagerstrœmia indica*, are kept pretty dry, but not too much so, as such would be prejudicial to the well-being of the plants. Roots of herbaceous *Begonias*, *Gloriosas*, *Achimenes*, *Caladiums*, *Nymphæas*, &c., are carefully stored in dry silver sand in a dry place secure from rats, which are apt to injure them.

Indoor Fruit and Forcing Department.—Pine suckers are taken off and potted as they become ready. The whole stock is kept pretty dry, except such plants as are swelling fruit. A covering of litter or mats is laid over the frames at night, in order to lessen the amount of fire heat. A bottom heat of from 70° to 75° is maintained, and a top temperature of from 60° to 65° for swelling fruit, with 5° less for succession plants.

Vines.—The temperature of vineries started last month is increased about 2° a week by day, and 3° or so a fortnight by night. Too high a temperature before the buds break is avoided; but after they begin to grow freely the heat is gradually raised to 60° and 70° in the daytime.

Peaches.—The general stock of Peach and Nectarine trees in pots is being shifted, and the earliest Peach houses are started. A temperature of from 40° to 45° is maintained at first by merely keeping the house close, with just a little heat to exclude frost; gradually increasing it a degree or two weekly. The plants are syringed twice on fine days with water of the same temperature as that of the house.

Figs.—These are being shifted as may be necessary, using a compost consisting of a good calcareous loam, made firm in potting. Some Fig trees in pots are introduced into vineries at work, or into Pine stoves, in positions where they may have plenty of light, for producing some early Figs.

Cherries.—These are taken in from where they were standing out of doors, and are plunged in a shallow bed of leaves in the orchard or Cherry house. They are allowed a temperature of about 45° at night, and 10° higher by day; over-forcing would be sure to result in failure.

Cucumbers, &c.—For Cucumbers a bottom heat of 75° is maintained, and throughout the day an atmospheric temperature a few degrees higher is recommended. If the roots appear thickly on the surface of the soil, a top-dressing is applied, and occasional waterings of weak manure water are given. The plants are syringed about three times a week, at mid-day, if the weather is favourable. *Asparagus*, *Seakale*, *Rhubarb*, *Dandelion*, *Chicory*, and *Endive* are forced as required, either in the Mushroom houses or in pits prepared for them. French and Broad-leaved *Sorrel* are potted and placed in gentle heat, as is also *Mint*. *Mustard* and *Cress* are sown as required, in boxes of light soil.

Hardy Fruit and Kitchen Garden Department.—The branches of old fruit trees intended to be grafted are sawn off almost close to the place where the grafts are to be inserted. The pruning of fruit trees and bushes, with the exception of *Gooseberries*, is being proceeded with, and the best of the shoots saved for purposes of propagation. Wall trees are being nailed during the warmest part of the day. Some are entirely loosened from the wall, in which case all holes caused by old nails are refilled with lime, and when finished

the trees are again nailed to the wall. Mulching is kept in readiness to lay over the roots of Jerusalem Artichokes when wanted. Parsnips and Celery left in the ground are also protected from frost. A little earth is drawn to the stems of Beans and Peas that have appeared above ground. A successional sowing of Peas is made on a warm border. Cauliflower plants forming heads are taken up and placed in a shed or other cool dry place secure from frost. Broccoli is partially lifted and laid in a slanting position with the heads towards the north, or the plants are taken up entirely and transplanted closely in some sheltered corner, still laying their heads to the north. Cauliflower plants in frames are given plenty of air, as are also Lettuces. Asparagus beds are surface-dressed with three or four inches of manure. All empty spaces are being trenched whenever the weather is dry, but digging the ground or treading it when saturated with wet is carefully avoided.

NURSERIES.

Indoor Department.—Plants generally are being cleaned and staked. Most of them require a season of rest, but the old practice of subjecting them to almost absolute dryness throughout the winter is becoming obsolete. Now-a-days they are kept moderately moist, but at the same time much drier than during their growing season. The drying effects of so much fire-heat are guarded against by frequently sprinkling the paths and walls both in houses and pits with water. Where an opening exists between the side shelves and the wall or glass front, the dry heat ascends from the pipes with great force. To obviate this, nurserymen place a layer of sphagnum in the space between the wall and stage, and keep it continually saturated with water. Under the stages on the floor, and below the pipes, a bed of sphagnum is also laid, for the purpose of moistening the atmosphere; more particularly is this employed in Orchid houses, where atmospheric moisture, even in winter, is a necessity. The syringe is entirely discontinued for a period, except in the case of Orchids on blocks, but even these, if hanging from the roof or wires above other plants, are not syringed, but are occasionally taken down and dipped in tepid water. Imported Orchids are hung up by the heels, to prevent water from lodging about the base of the leaves, as such would be apt to cause rot, and to ultimately destroy the plant. Roots of stove plants, such as Caladiums, Achimenes, Gloxinias, Gloriosas, early started herbaceous Gesneras, &c., are shaken out of the pots in which they were grown, and are placed in pots of dry silver sand. Perhaps as many roots as grew in a dozen pots, are placed in one, so as to economise space. Beaucarneas are cut over near the top, and are allowed to start, after which the young tops are taken off close to the old stump, and inserted in sand in a gentle bottom heat. Unshapely and backward plants of the tall green-leaved Dracenas, are similarly treated. Screw Pines or Pandanus are increased from shoots that push near the base; they are taken off and inserted in cocoa-nut fibre or peaty soil, in a brisk bottom heat in the propagating pit. Stove plants in general are being propagated, and such as are rooted are potted into small pots. Succulents, such as Agaves and Cacti, are also increased—the former by means of suckers, the latter from the little crowns that grow on the ribs.

MARKET GARDENS.

In these work is almost at a standstill. Most of the workpeople have been discharged for a short period, except those for gathering and preparing vegetables for market and such things as require daily attention. As a rule Cabbage plants of all kinds have been planted, Cauliflowers pricked out in frames and under hand-lights, and also pricked out in beds in sheltered positions. As soon as ground becomes vacant it is prepared for other crops; Cauliflowers are therefore lifted and transplanted in it in groups of nine, and a space of four feet is left between each group, over which hand-glasses are placed. Growing vegetables look well and promise to produce good crops. Lettuces in frames have come up pretty uniformly, but wherever drip has ingress the plants affected by it are killed. Great pains are taken to slide off the sashes to the back of the frames on every dry period throughout the day, and to replace them immediately there is danger of wet, the sashes tilted up a little when on the frames both night and day, except when there is danger of frost. Cauliflower plants in frames and under handlights are treated precisely similar, with the exception that they are less susceptible of injury from wet than the Lettuces. All weeds are removed from amongst them, and where Lettuces are too thick they are thinned; where Carrot seeds were sown amongst them they have come up, and consequently must have room to grow. They are generally retained in the frames after the Lettuces are transplanted in the open ground. Mushroom beds in some instances are not bearing so satisfactorily as they commonly do, owing to the continual wet and cold weather to which they have been subjected since their formation. Where they are very bad, the surface covering of manure is nearly all removed and replaced by fresh manure.

OBITUARY.

We have to announce the death of Mr. J. K. Lord, the eminent naturalist, and manager of the Brighton Aquarium. After three paralytic attacks Mr. Lord succumbed at Brighton on Monday, where, although incapacitated from active work for some days, he may be said to have died in harness. Mr. Lord was a studious and enthusiastic worker in all matters connected with natural history subjects, and his opinion on all such questions was highly thought of. He was appointed Consulting Naturalist to the first Boundary Commission of Canada, his experiences of which he published in two books called "At Home in the Wilderness" and "The Naturalist in British Columbia." A few years ago Mr. Lord went to Egypt, at the request of the Viceroy, to make some investigations connected with mines and the natural history of the country. By the death of Mr. Lord, the Brighton Aquarium Company lose a valuable and not easily replaced manager, natural history a clever and hard-working student, and many a kind-hearted and true friend.

We have also to record the death of Mr. W. H. Caparn, which took place after a short illness on Wednesday, the 4th inst., at Newark. Mr. Caparn, who was sixty-nine years of age, was a seedsman at Newark, a town of which he was at one time mayor, and for nearly half a century he had been officially connected with it in various ways.

A REMARKABLE phenomenon occurred at King's Sutton, near Banbury, on Saturday week, through which a man narrowly escaped with his life; seventeen trees were torn up by the roots, thirty-six more or less damaged, and 116 yards of a stone wall thrown down. People living near the place say that about one o'clock they saw something like a haystack revolving through the air, accompanied by fire and dense smoke. It made a noise resembling that of a railway-train, but very much louder, and travelled with greater rapidity. It was sometimes high in the air, and sometimes near the ground. It passed over the estates of Colonel North, M.P., Sir W. R. Brown, Bart., and Mr. Leslie Melville-Cartwright, whose park wall it threw down to the foundation in several places, and at one place for upwards of 60 yards. A man named Adams, was breaking stones, and a minute before he was standing under a tree that was torn up by the roots and the branches scattered in every direction. Two or three trees near him were torn up, and one of them, the largest Beech on Sir William Brown's estate, which tore up with it twelve or fifteen tons of earth. For a distance of nearly two miles, hedges, rails, trees, hovels, and ricks have been knocked down or injured. A whirlwind followed the meteor, if it may be so called, and carried everything before it. Stones from the walls knocked down were carried 40 yards away, and the water in a pond disappeared on the passage of the phenomenon. After travelling about two miles, the meteor seemed to expend itself, and disappear all at once. There was a heavy fall of rain at the time, and a vivid flash of lightning just before.

THE gale of last Sunday night, so disastrous generally, played sad havoc with trees in many parts of the country. In the London parks many trees were torn up from the ground by the force of the wind. The engine drivers of the night mails had to exercise the greatest caution in driving their engines, owing to the lines being strewn in places with branches of trees and other obstructions. At Exeter, a cabman, named Cann, was driving his vehicle a short distance from the city when a large tree fell on him, crushing him severely. Considerable damage was done to the trees in Windsor Forest. At Ashford, near Staines, the roof of a large greenhouse was completely stripped, the glass being scattered many yards away; and at Whitton Park, near Hounslow, several fine trees, the property of Mrs. Gostling, were blown down. Several large trees were also blown down on Woolwich Common, in the Royal Arsenal, and elsewhere, and one mighty Elm, near the Royal Horse Artillery Riding School, was uprooted and thrown across the avenue known as St. John's Passage, breaking down a wall in its descent. A very large Elm tree, growing at Apple Tree Farm, Chorley Wood, Rickmansworth, occupied by Mr. James White, was blown into the turnpike road close by the toll gate, and vehicles were obliged to pass through the farm instead of the turnpike gate. Some large trees growing at Batchworth Heath, near Moor Park, Lord Ebury's mansion, were also blown down. The trees in and around the city of Bath have severely suffered, in one instance a large Elm being lifted out of the ground by its roots. The gale was, we understand, very severe in Paris and its neighbourhood, many trees being uprooted. The Longchamps race-course is a lake. Thirty trees were broken in the Luxembourg Gardens, and a marble statue smashed to atoms. Two policemen were killed at Versailles, where many roofs came down. The chairs in the Champs Elysées were scattered about like chips, and many high posts were snapped in two.

To call a spade a spade may or may not be libellous; but it is a libel to call a Knave of Spades a knave. A British Judge would no doubt also rule that it was libellous to call a rake a rake.—*Punch*.

THE GARDEN.

“This is an art

Which does mend nature: change it rather: but
THE ART ITSELF IS NATURE.”—*Shakespeare.*

A BOUQUET OF WINTER-FLOWERING ORCHIDS.

CHOICE flowers are at all times desirable, but it is during our dull wintry months that we appreciate them most. When the grounds outside are bound hard by frost, or covered with snow, we enjoy most thoroughly the luxury of our conservatories. Here the choice exotics of more sunny climes display their delicately-tinted flowers and diffuse their refreshing perfume, while within a few inches of their buds and blossoms silvery stalactites glisten from the very eaves of the house in which they are growing. If we take a walk round our Orchid houses, we shall have no difficulty in selecting a profusion of Orchid blooms for our bouquet. Here is the lovely *Calanthe Veitchii*, with its tall tapering spikes of rosy flowers—not so large as those exhibited by Mr. Jaques, but none the less beautiful. It requires an effort to send the steel blade through the stem, but it is done, and is a bouquet in itself. Three sprays of its congener *C. vestita* are quickly added, and then we pause for a moment before a glorious *Phalænopsis grandiflora*, and note the beauty of its delicate green flower-stems as they droop gracefully with their precious weight of pearly flowers. How beautiful is the outline of the broad petals, and how delicately they are sculptured on the upper surface! Shall we gather blossoms from this plant? No, we will rest content with the more abundant treasures of our houses and leave that queenly *Phalænopsis* to revel in its beauty. Here is a rich bank of floral treasures! Here in profusion are *Lælias*, *Oncids*, *Lycastes*, *Odontoglots*, and last but not least, our old favourite *Dendrobium nobile*. Here we can cut with less compunction, for have we not *Lycastes* and *Dendrobes* waiting patiently in a cool airy house ready to succeed those now in floral beauty? Yes, and our old friend *Cypripedium insigne* never fails to supply us with a liberal quantity of grotesque flowers for winter decoration. We have also just added a couple of flower spikes from *Lælia autumnalis*, and, oh! how deliciously the blooms of this species are scented! though, for delicate fragrance, we must award the palm to another of our winter flowering pets—*Dendrobium heterocarpum*, an old and sadly too-much-neglected species, having the refreshing odour of spring Violets. No better description than this is needed to make its creamy blossoms admired, though they are borne on stems not unlike dried sticks. Again we ply our relentless steel, and this time two spikes of *Lælia anceps* and a small spike of *Odontoglossum Alexandræ*, with eight of its delicately beautiful flowers, are added to our bouquet. How we revel amid these radiant flowers, as again the knife is brought into requisition, and we add a dense spray from above the speckled bulbs of *Oncidium cheiroporum*, followed by sprays from the Lilac-flowered *O. incurvum* and *O. ornithorhynchum*, while the golden treasures of *Cræsus* seem to tempt us in the great drooping panicles of yellow blossoms borne by the little known *O. obryzatum*, one of the freest-flowering *Oncids* we have, not even excepting *O. flexuosum*. We marked its adaptability some years ago, and it has amply repaid us for our pains by its liberal contributions to our winter floral decorations. Its flowers are scented like those of Hawthorn; even in herbarium specimens that have been dried several years, this odour may be detected. Again, we add to the beauty and variety of our bouquet by robbing a small plant of the cœrulean *Vanda* of its only spike. These delicate bluish-lilac flowers are so distinct in colour from all other Orchids, that we are always glad to see them pay us a visit for a month or six weeks at this dull season. Once more we cut a couple of spikes—this time from *Oncidium Phalænopsis*, and now we are satisfied for the present, though *Odontoglots* are throwing up their spikes with sturdy vigour on all sides, and the scarlet blossoms of *Sophrontia grandiflora* gleam with warm colouring. To this *Ada aurantiaca* is a formidable rival, with its orange-scarlet flowers set on nodding

spikes, amongst foliage of the brightest and freshest green. *Zygopetalums*, especially *Z. Mackaii*, are blooming in rich profusion, while a few plants of *Cattleya labiata* still bear them company. *Cœlogyne cristata* is coming on rapidly, and will soon be one mass of snowy blossoms. This is one of the most lovely of all winter-flowering Orchids, its delicate white flowers being seen to the best advantage beside the plump, glossy pseudo-bulbs and dark green foliage. Now for a few Fern fronds, and our bouquet is complete, the delicate tints of the Orchid blooms being enhanced by the addition of the fresh green fronds. It is now a floral ornament of rare beauty, and as such let us present it to our readers—a real gem at this season of the year. B.

THE season has as yet been severe only in its rains, which have brought garden work almost to a standstill. But it, as is not unlikely, the present period of intense wet is followed by a severe frost, our gardens may suffer very severely. It should never be forgotten that dryness is one great source of protection—dryness at the root, that is, well-drained ground; dryness in the plant, by having the snow, should it come, removed from its branches: and, in the very tender plants, dryness by shelter from rain as well as snow. As the country is now in many places a marsh or a lake, and gardens saturated to an almost unprecedented degree, it behoves us to look even more carefully to protection of various kinds than if the season were a dry and frosty one. The importance of deep cultivation and thorough drainage is impressed on us with more than usual force this season.

M. ARMAND writes very despondingly to the Académie des Sciences as to the disastrous increase in the ravages made by the phylloxera among the French vineyards. He feels persuaded that in a few years' time the whole of the Vines in Provence will have disappeared, unless some means of destroying the insect can be discovered. M. Cornu, who has been despatched into the Bordeaux country by Government to report on the increasing damage caused by this scourge, declares that in nearly all the vineyards which run down to the river banks the plants seem to have dried up, and that the vineyards in other situations have been attacked in such a way that the devastation is circular in shape; whence the expressive name of “oil spots,” which indicates that the malady has spread from the centre to the circumference. The phylloxera has not confined its attentions to the Vine, fruit trees everywhere in the same neighbourhood having also suffered.

WITH one of the greatest dearths of fruit ever experienced at home it is cheering to read the following in our excellent contemporary the *American Agriculturist*, particularly when it is considered that improved communication now permits of the orchard products of the new world being sold in our markets at moderate prices. The year 1872 will long be remembered as an abundant fruit year in all parts of America. The rains have been abundant, and almost without exception every kind of fruit has done well. The wild fruits, Grapes, Strawberries, Whortleberries, Blackberries, Raspberries, Plums, have been so plentiful that the larger part of the crop has rotted upon the bushes. The vineyards in the west have been loaded with Grapes, and the growers have found it difficult to market them at three halfpence a pound. Pears have been so abundant in the fruit yards of our villages, that it has been difficult to sell them at any price, and for once fruit growers of a benevolent disposition have been permitted to give to their neighbours freely without any fear of depleting their own purses. Apples especially are so abundant in all parts of the country where they have orchards, that immense quantities of summer fruit have rotted upon the ground. In old pastures trees that have been barren for years have been loaded with fruit. Dusty cider mills and presses long unused have been put in order, and the familiar squeak of the grinding Apples has been heard in almost every rural district. It is also a great good to have fruit so cheap that the poorest families in city and country can enjoy it. It has been so dear, in most years, that labouring men, in cities especially, have felt that they could not afford to buy it. Apples at five dollars a barrel, and Grapes at twenty-five cents a pound, were beyond their reach. There can be no doubt that the market for fruit has been greatly enlarged by the bounty of this year, and the losses of the fruit growers from very low prices may be regarded as so much capital invested for future operations. Every market in the country will take more fruit next year at paying prices, in consequence of the abundance of this.

NOTES OF THE WEEK.

— WE learn that Mr. Alexander McKenzie has resigned the office of landscape gardener to the Metropolitan Board of Works, with which he has been connected in that capacity for some years.

— A GREAT many Anthuriums are now in flower in the tropical house at Kew. Conspicuous among them is *A. acaule*, the spadix of which is about 8 inches long and of a light purple colour.

— MESSRS. LITTLE & BALLANTINE, of Carlisle, have sent us specimens of the large and excellent collection of Hollies their nurseries contain. They seem peculiarly wealthy in those variegated and laced kinds which now tend to make an always precious family of hardy shrubs more than ever attractive.

— A MEMBER of the Paris Academy of Sciences has marked on a chart all the places where the new Vine pest has been found, and says that its ravages extend over at least 2½ millions of acres. The worst part, too, is that it is declared that no efficient remedy has yet been found for this pest.

— A BEAUTIFUL new *Cattleya* is now in flower in Mr. Bull's nursery, King's Road, Chelsea. It is called *C. Chocoensis*, and as its name implies is an introduction from Choco. Its flowers are beautifully white, except the lip, which is just tipped with rosy purple. Whether this is a distinct species or merely a variety of some other kind, has yet to be determined.

— A SMALL plant of that rare Orchid, *Lælia præstans*, is about to flower in Dr. Ainsworth's collection, Lower Broughton, near Manchester, where it is growing on a block in the *Cattleya* house. This plant is often confounded with *Cattleya marginata* of gardens, but it is quite a distinct variety, the difference between it and *marginata* being clearly obvious, when the two are compared together. A fine plant of this species has borne over twenty flowers, all in beauty at the same time, under the care of that excellent cultivator, Mr. John Stevenson, Timperley, Cheshire.

— THE great horticultural exhibition to be held at Manchester next season promises to be one of the most important events of the year. In the short space of five weeks £1,000 have been subscribed towards it, and Mr. Bruce Findlay, to whom the whole matter has been wisely entrusted, is, we understand, determined to raise this sum to £2000, independently of the Manchester Botanical Society's donation of £400. Among the subscribers are the Duke of Devonshire, and Lords Wilton, Sefton, Egerton, and Derby, the last of whom has consented to preside at the banquet that will be held in the evening of the day on which the exhibition opens.

— AT a recent sale at Stevens's auction rooms, the following rare Lilies realised prices as follows:—*Lilium Washingtonianum*, good roots, 18s. to 21s. each; smaller roots, 8s. to 11s. each. *L. pardalinum* (new), good roots, 15s. to 20s. each; smaller roots, 7s. to 12s. each. *L. carnolicum*, good roots, 8s. to 11s. each; smaller roots, 4s. 6d. to 6s. each. *L. candidum* (yellow laced-leaved), 9s. to 12s. the pair. *L. concolor*, small bulbs, 3s. 6d. to 4s. each. *L. byzantinum*, 7s. to 10s. each. *L. Leichthiui majus*, 7s. to 9s. each. *L. Wallichianum* (very scarce), only one bulb offered, 32s. 6d. *L. dalmaticum*, the black Lily of Montenegro (scarce), only two bulbs offered, 18s. each. *L. Sovitzianum* or *colchicum*, 8s. to 9s. *L. Humboldtianum*, 12s. to 15s. *L. californicum*, 18s. to 20s.—G.

— ON the occasion of the visit of the Prince and Princess of Wales to Derby, the other day, Mr. Cooling, of the Mile Ash Nurseries, had the honour of supplying the bouquet which was presented to the Princess by the Mayoress. It consisted of the rarest and most beautiful flowers in cultivation, arranged with much taste. The groundwork consisted of choice Orchids, including *Dendrobium nobile* and *moniliforme*, *Calanthe vestita rubra*, *Cypripediums*, *Oncidiums*, &c., filled in with red and white *Camellias*, *Heaths*, *Violets*; red, white, and yellow *Roses*; White Indian *Daphne*, *Azaleas*, *Mignonette*, *Jasminum Sambac*, double *Primulas*, &c., the whole edged with the brilliant scarlet *Poinsettia*, which, lying on a margin of softest green, consisting of *Adiantum Farleyense* and *Gleichenia Speluncæ*, had a beautiful effect. The other floral decorations used in connection with the event, were also, we understand, supplied by Mr. Cooling.

— IN the market gardens of Mr. Wilmot, of Isleworth, is a Strawberry house 100 feet long, and 9 feet high, with a seven shelled stage in it, having the same slope as that of the glass, from which it is distant about 18 inches. In this house at present are stored about 1,600 lbs. of Grapes, consisting of *Lady Downes*. The bunches were taken off the Vines with a few inches of wood attached to them, both below and above the stalk; the portion of wood below the bunch is then inserted in transparent half pint sauce bottles full of water, and containing a small piece or two of charcoal. These bottles are made fast to sloping boards placed in the angles of the shelves and the Grapes hang through the stage to the inside, in a similar way to that in which

they were growing. Seven rows are arranged in this manner, about fifteen inches being left between each row. This experiment was tried by Mr. Wilmot for the first time last year, and answered exceedingly well, for it enabled him to keep his Grapes till spring, when they realise high prices. The Vines too, owing to being relieved of their burden, may be pruned and well rested before they are again brought into operation. The house in which the Grapes are stored is kept at an equable temperature, but light is not excluded from it, and any deficiency of water caused by evaporation is supplied by means of an oil flask with a long spout.

— AT the Smithfield Show the other day a machine was shown which cleans and pares Potatoes in such a manner as to render them immediately fit for cooking.

— EMBOTHRUM COCCINEUM has been proved to be quite hardy in Mr. Hamond's garden at Cherbourg. This is a noteworthy fact. The plant deserves trial in the milder southern districts and in cool houses.

— PARIS consumes (says the *Graphic*) no less than three millions of Oranges from the 20th of December to the 20th of January, at a penny a-piece. The very poorest woman buys one for a New-year's gift for her child.

— MESSRS. RANKIN & Co., Drury House, St. Mary-le-Strand, W.C., will in future, publish the *Journal of Botany*.

— MR. H. C. WATSON has printed, for private distribution, a Supplement to the Compendium of "Cybele Britannica," comprising an extremely useful epitome, accompanied by a map, of the distribution of all British species and sub-species of plants through the thirty-eight sub-provinces into which Great Britain is divided.

— DR. WILLIAM ULRICH publishes an International Dictionary of plants in Latin, German, English, and French. Notwithstanding inaccuracies in the English department, it appears extremely well done, and to be a useful compilation.

— MR. JAMES F. ROBINSON, of Frodsham, Cheshire, is about to publish "A Flora of the Isle of Man," in memory of Professor E. Forbes, who was a native of the Island. It will be illustrated with engravings of the principal island scenery (waterfalls, &c.) and accompanied with a specimen of the Maax Fern (*Adiantum Capillus Veneris*) mounted as a vignette.

— AMONG the many things provided for gifts at this season may be mentioned the pretty packets and boxes of perfumes, of nearly every flower from which an odour is distilled, that are prepared by Mr. Eugene Rimmel, of 96, Strand, who so successfully surrounds us with the odours of our sweetest garden flowers at this season, so dismal as far as the garden is concerned.

— THE whole of the valuable collection of plants belonging to Sam Mendel, Esq., Manley Hall, Manchester, is to be sold by auction early in the ensuing spring. That this is one of the best private collections of plants that has ever been brought together is a fact doubtless familiar to most of our readers, and their sale is a matter of importance both to private purchasers and to nurserymen.

— THE weather is as bad in France as with us. For nearly two months (says the *Constitutionnel*) constant rains have flooded our fields and almost everywhere made the autumn sowing—already far behind—very difficult. The extreme moisture is, of course, rotting the Potatoes and all other root crops still in the ground. Along the banks of the larger French rivers and also of the streams the inundations continue, though, fortunately, they have not been productive of any great disasters, as the waters come and go quietly enough without sweeping away the dykes intended to check the overflow of the rivers, and therefore without precipitating heaps of sand over the soil of the fields. The seed sown along the banks will doubtless be rendered useless; but consolation is extracted even from this misfortune, as it is said the waters will, after passing away, leave a fertilizing mud or slime behind them that will prove beneficial in the future.

— THE testimonial subscribed by his friends on the completion of his fiftieth year as gardener at Dropmore, was presented to Mr. Frost the other day at a dinner, at which he was entertained at Slough. It consisted of a silver cup, of the value of £25, and a purse containing nearly £200. The cup bore on one side a representation of *Abies Douglasi*, Mr. Frost having half a century ago planted a tree of that Fir in the Dropmore grounds, which is at the present time upwards of 100 feet in height. On the other side of the cup was a portrait of the fine *Araucaria imbricata*, for which Dropmore is so justly celebrated. On hearing that Mr. Frost's friends were going to present him with a testimonial, Mr. Fortescue, his present employer, sent him a cheque for five guineas, not wanting his name to appear in the subscription list. Mr. Fortescue also wrote a very kind letter, which he (Mr. Frost) valued much more than the money thus kindly presented to him.

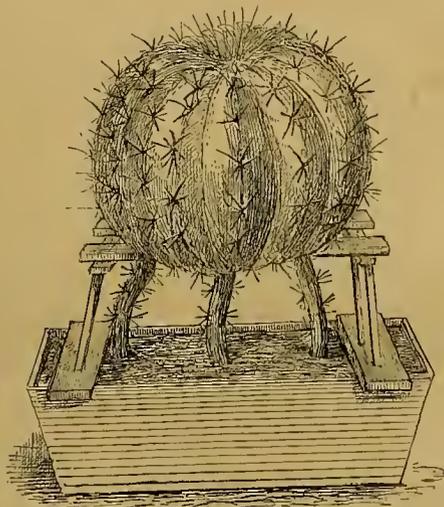
THE INDOOR GARDEN.

A THREE LEGGED CACTUS.

(ECHINOCACTUS POTTSII.)

THE subject of the annexed engraving is one of the monster globe Cacti of California; it is a vegetable curiosity grafted on three stems of *Cereus tortuosus*; its flowers are sessile and yellow; its spines are an inch long, and are arranged in sets of seven, one being in the centre; the angles, or ribs, are about 3 inches apart, and the skin, which is thin, is of a beautiful shining metallic green. Salm Dyck describes this plant as a variety of *Echinocactus bicolor*, and Lahouret as a synonym of *E. californicus*; but they are both in error, as *E. californicus* has the central spine strongly hooked, and has depressions between the sets of spines on the ribs, while in *E. Pottsii* the ribs are straight. *E. bicolor* has also depressions between the sets of spines; it is also softer than *Pottsii*, and has larger purple and rose-coloured flowers, produced from the centre. Lahouret describes *E. californicus* correctly, but his description will not apply to the present plant, a fact which appears to have occurred to him, as he seems somewhat in doubt on the subject.

Many who have written about Cacti define how many angles or ribs each particular species has, but this is apt to mislead, as plants even of the same species vary as much in this respect



A three legged Cactus.

as from four to eight, and even the same plant takes up or drops angles or ribs, according to circumstances. The head, which measures 18 inches in diameter, is much too heavy for the thin legs on which it is grafted, and therefore additional support has been given it in the shape of a light framework or stool, fixed on the box in which the roots grow.

Extensive as Mr. Peacock's collection of succulents is, no plant in it has been more admired than this, or considered to be, in its way, a greater curiosity.

J. CROUCHER.

THE AZOREAN FORGET-ME-NOT.

(MYOSOTIS AZORICA.)

SOMETIMES one meets with the beautiful blue Azorean Forget-me-Not (*Myosotis azorica*) well grown in pots, and, when nice healthy plants in full bloom are seen in the month of July, they are very pretty. I have occasionally met with the plant used for outdoor culture, but rarely in the character it shows when well grown in pots. In "Hardy Flowers" it is recommended that, when cultivated in the open ground, it should be placed in "warm and moist nooks in the rock garden, or half-shady spots in borders, in moist peat or sandy loam with leaf-mould. It does not long endure, and is somewhat tender, so that some seed should be sown every year in spring or summer, some of the seedling plants to be kept over the following winter in frames." Some of the best examples of this beautiful deep

blue Forget-me-not I ever met with had been raised from seed about the month of May in a moderate and somewhat moist heat. As soon as the plants were large enough for the purpose, they were potted off into 60-sized pots, and grown on in these in a cool frame during the summer. When the pots had become well filled with roots the plants were shifted into 32-sized pots, and when established in these they were placed on an upper shelf in a greenhouse, near the glass, where they were kept during the winter. By this time they had become nice, strong, bushy plants, forming a good foundation on which to rear next season's specimens; for it is hardly possible to grow them to such a size as to be worth notice as flowering plants during the first season. After the plants had begun to make growth in the spring they were re-potted into 12-inch pots, three to five plants, according to size, being put into each pot, and placed in the warmest corner of the greenhouse. A vigorous growth soon ensued; and then, with ordinary care and management, and with the help of a little tying out to neat stakes, the specimens became 2 feet through and 18 inches in height; and about the early part of July they were covered with their glowing purplish-blue flowers, and formed some of the finest blue-flowering plants for decorative purposes that can be grown. It is a plant that well deserves a much more extended culture than it receives; it is managed with comparative ease, and, when formed into good-sized specimens, produces its flowers in great abundance, and retains them for a long time. A mixture of loam and peat, in a somewhat rough and fibry state, with some silver sand added, forms a suitable soil for this *Myosotis*; for the old plants some leaf soil can be used with it. There should be sufficient drainage for the water to pass readily from the plants, and at the time of active growth there must be no stint of moisture at the roots. Quo.

TREE CARNATION "LA BELLE."

THIS variety was raised from one of a few seeds obtained on the continent three years ago, and reared under difficulties. No idea whatever was entertained of getting anything better than ordinary Tree Carnations, and therefore when the seedlings came up they were pricked out in thumb-pots and placed on a window-ledge, where they got blown about for some weeks and received no attention whatever. Later in the season they were subjected to full three weeks of severe frost. When March arrived, it was noticed, with no small surprise, that the tiny seedlings were still alive, despite their rough treatment. They were then planted out, and by the middle of September "La Belle" made good its claim to better attention. It was growing among Chickweed and Groundsel, producing blooms of snowy whiteness, without a stick to support the wiry-like climbing growth, the flowers being as large as those of the old crimson Clove, and having a scent equally powerful. It was speedily separated from its companions, the weeds, and was carefully potted and trained. Its rapid growth, however, soon showed that it required special training; a halloon trellis 5 feet in height and 3 feet in diameter was, therefore, fixed for its support. The rapidity with which even this trellis was covered was really surprising, as was also the profusion of flowers and buds which was produced, and which could be numbered by hundreds. Indeed from three to five dozen fully expanded blooms were cut every week from this plant all the year round. At every successive shift several joints of the shoots were plunged in the soil, and these threw up a fresh growth all round the bottom, besides forming fresh roots, and to this treatment may be attributed the enormous number of main stems the plant sends up. It is also a habit peculiar to "La Belle" to send out a fresh shoot from every joint on each stem, and these laterals again send out others in the same manner, all terminating in clusters of bloom. The mixture used for potting this variety in is the same as that employed for ordinary Carnations, but "La Belle" will not stand forcing, and therefore growing it in heat must not be attempted.

Leyton.

J. BLACKLEY.

POTTING AND WATERING ORCHIDS.

THESE are important operations, and, in conjunction with atmospheric moisture, must be considered to be the foundation of Orchid cultivation. Carbonic acid gas is always liberated in more or less quantities by decomposing vegetable substances, and this gas, together with ammonia in small quantities, is very beneficial, indeed actually essential to the growth and vigour of growing plants of all kinds. It is a notable fact that most cool Orchids grow best in decaying vegetable matter. More especially does this remark apply to such Orchids as *Odontoglossums* and *Masdevallias*. Most of the *Cypripediums* will grow in turfy loam, but the more fibre it contains the better they will grow, a fact which conclusively proves that

they derive their nutriment more from the decaying vegetable matter contained in it than from the mineral or earthy constituents of the compost. Again, every cultivator knows how vigorously the old *Cypripedium insigne* and *C. barbatum* and its varieties grow in peat, sand, and dried cow-dung, and this is nearly exclusively a compost of decayed vegetation. The sand of course contributes nothing of a nutritive character to the plant, but it keeps the compost in a porous condition. While speaking of sand I would recommend that great care be taken in its selection, for some of the sand obtained in limestone districts is injurious, on account of the quantity of lime which it contains. Sand should be carefully washed, and if the water becomes milky it should not be employed, as in that case it would do more harm than good. In potting Orchids perfect cleanliness should be observed, not only as regards the



Orchid Pot, drained and ready for compost.

Layer of Sphagnum.
Small Crocks.
Large Crocks.

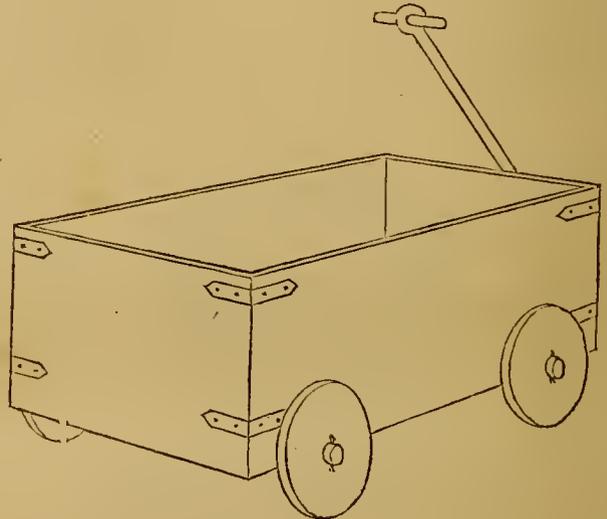
pots themselves, but also with respect to the drainage, or "crocks," which should be carefully and thoroughly washed and dried previous to their being used. For *Odontoglossa*, *Oncids*, and *Masdevallias*, the pots should be at least half full, or rather more than less, of crocks, a layer of very small ones being placed on the top of the larger pieces, to prevent the compost from being washed down, and thus preventing the superfluous water from passing away freely.

The compost itself should consist of really good and fresh fibrous peat, to which may be added about one-fourth of well dried horse-droppings, a little chopped living sphagnum, and a few broken crocks, adding a sufficient quantity of coarse well-washed river sand, ordinary white sand being generally too fine for this purpose. This compost is the best that can be used for the majority of cool Orchids, and if placed on good drainage will be found to hold water only by absorption as it were or by capillary attraction. This is the principle on which all Orchids should be grown. There must be no obstruction to the free riddance of superfluous moisture, or the compost will quickly become sour, and then the roots will decay. It has been repeatedly observed that cool Orchids, more especially *Odontoglossa*, can never be supplied with too much water at the root when growing, provided the compost is fresh and open, and that the drainage is perfect. The same remark applies to the glorious terrestrial Cape Orchid, *Disa grandiflora*. This, in addition to a liberal supply of moisture at the roots, should be syringed several times daily when in full growth; it should be kept in a very cool house or pit, and in a shady position. When the pot has been drained place a thin layer of sphagnum, the best you have, over the drainage, and upon this put the compost. Carefully spread out the roots and pack firmly with the compost, but use caution, and do not crush or bruise them, or they will decay. See that the bases of the bulbs are slightly elevated above the rim of the pot, and water the plants but sparingly at first, until the production of fresh roots demands a fuller supply. The best method of watering well-established, healthy-growing plants is to have a galvanised iron or wooden tank, say 4 feet long by 2 or 2½ feet broad and from 2 to 3 feet deep. Get this mounted on a low carriage with four solid wooden wheels, and when filled or nearly so with tepid soft water, it can be drawn the entire length of the house, and the plants, or rather the pots, plunged into it and held there until thoroughly saturated. This is the best way of supplying water to the roots of healthy growing plants, but it should not be adopted unless the compost is per-

fectly porous and well drained. Again it is the only way by which Orchids on blocks can be thoroughly well supplied with moisture at their roots.

The best plan to pursue with regard to watering is to carefully observe the habits of the plants themselves; when they evince a tendency to stop growing, or to rest, water should be gradually withheld, only giving just enough to prevent shrivelling. When they commence to grow, and to produce roots, they should be encouraged by the application of more moisture, both at the roots and in the atmosphere, no matter at what period of the year this may occur. If the moisture has been reduced in consequence of most of the species contained in the house being at rest, and if one or two species that require extra heat, except when at rest, commence to grow, they should be removed to a more humid atmosphere, as, for instance, a moderately warm greenhouse or intermediate house, where they should be suspended, or staged as near to the glass, *i.e.*, light, as possible, for during the dull period of the year they require all the light they can possibly obtain.

All Orchids require an abundant supply of moisture and a fresh, porous well-drained compost, and many of them, if



Moveable Water Tank.

favoured with these essential conditions, will not only bear without injury a mean winter temperature of 45° to 50°, but will actually make most vigorous and luxuriant growth in that comparatively low temperature.

F. W. BURBIDGE.

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Dendrobium heterocarpum (aureum).—This pretty little Dendrobe is just now in flower. It is easily grown, and well established plants produce a profusion of delicate violet-scented flowers, which come in very handy for bouquets during the dull season of the year.—F. W. B.

Fruit of Tacsonia Van Volkemii.—Will some of your readers who have had experience with this fruit kindly say to what purpose I can best put it. I have about twenty fruits of it, green and ripe, on a plant, and I know not how to utilise it.—NANTWICH.

Honeysuckles for Forcing.—Deciduous Honeysuckles are amongst the easiest of all shrubs to force; they come, indeed, into bloom more quickly after being placed in heat than most plants usually grown for the purpose of furnishing flowers in winter. Strong cuttings of them made of ripened wood, with a heel attached, put in now and grown on for two or three years in the open border, will make good plants for potting, or old plants may be cut back and divided, and afterwards planted in nursery rows for a year. They may be grown either as dwarf bushes or standards, as the Honeysuckle is a shrub that easily assumes any shape that may be desired.—E. H.

Standard Roses for Pot Culture.—Any one who has a demand for cut Roses, and who has to bring them forward in vineries or other fruit houses, will find standards useful, as, owing to their heads standing out in the full light, both flowers and foliage during short days come stronger than our dwarfs. They are also useful for conservatory decoration, as they can be placed in suitable positions in borders amongst permanent plants that are not in flower, and where their naked stems can be hid. Used thus they are much more effective than small dwarf plants. Standard Roses may be kept in health for many years in 8 or 10-inch pots; by annually shaking them out in October, shortening the root a little, and repotting them in clean pots of the same size. Good strong loam, well enriched with thoroughly decomposed manure, suits them perfectly.—H.

THE FRUIT GARDEN.

THE VINE IN THE OPEN AIR.

(Continued from p. 507.)

AIDS TO GRAPE CULTURE IN THE OPEN AIR.

WALLS heated and unheated; warming the earth; portable glass protectors for enclosing the heat; ground Vineries of various sorts; glass screens, glass walls and gardens. All these assist the Vine either by adding to or husbanding and applying to better purpose our natural supplies of warmth. Since the cheapening of glass, and the rapid multiplication of glass houses, many of those simpler helps to culture have been less used and more lightly prized. But the cultivator cannot afford to dispense with anything ancient or modern that gives him the slightest advantage in his contentions with climate; besides, if Grapes are to be eaten by everyone, it is certain that they cannot all be grown under glass. Cheap as it is, it is yet beyond the reach of many. The cultivation of the Vine in glass houses should but stimulate and extend its growth outside. True, the Grapes may not be equal to those produced indoors, but nevertheless they will be equally, perhaps more highly prized by those to whom hothouse Grapes are impossible luxuries. The first great aid to the culture of Grapes in the open air is the almost illimitable area of unoccupied wall of the best aspect on houses and out-buildings throughout the kingdom; of such there are literally miles to be possessed, very much of it heated more or less by chimneys; the breath of stock, such as cows, horses, &c., and overhung by rude copings impervious to frost, and sheltered from the wind. All this ought to be forthwith furnished with Grape Vines or other superior fruits. Again, simple walls of furze, faggots of brushwood, earth, turf, concrete, &c., might often be erected or formed in warm sheltered nooks and corners, in which the sun gets entangled as it were, and his heat turned to account in the growth of Grapes. Walls too cold to grow Grapes might easily be warmed by flues. In our well-merited love of hot water as a heating-agent, we have rendered but scanty justice to other and cheaper methods of heating. Doubtless the flue system, with all its faults, has substantial merits, among the most obvious being the complete utilization of all the products of combustion at the least cost. True, all that flues can accomplish can be done with hot-water pipes, but the latter cost much, and the former little or nothing, if built with and into the wall. It is marvellous how little heat suffices to keep the frost from the face of a brick wall. A mere volume of hot smoke or the spent products of combustion from a common fire will do it. Of course there is considerable waste of heat in thus fighting the cold of the outer atmosphere from unenclosed centres. But where fuel is plentiful and cheap, flued walls will prove cheaper than glass houses, and most useful helps in the cultivation of the Grape Vine in the open air. They are easily constructed; the walls must be at least 14 inches thick, 21 inches being perhaps safer and better. The flues may vary in depth from 30 to 12 inches, and from 6 to 9 inches in width. They may become smaller or larger as they ascend, four being sufficient in a 10-foot wall. The first should be carried along within a foot or 18 inches of the base of the wall, the upper one within 6 or 9 inches of the coping, the furnace being placed 2 or 3 feet from the wall and precautions taken to guard against an excess of heat where the fire first enters. This is generally managed by forcing slow combustion by dampers in the neck of the flue or by adjusting and curtailing the supply of air to the furnace. A centre flue or chimney is also frequently employed so as to enable the cultivator to command more or less heat in any portion of the wall at pleasure. As the upper part of the wall is the coldest this is sometimes warmed first. There is a double advantage in this. The frost is driven off the weakest point and the ascending current of hot air protects the whole face of the wall during still frosts. There is also less danger from excess of heat at the furnace mouth, when it has the free run of a considerable length of flue, and the draught is checked by a long course downwards from the upper through all the lower flues in succession. Considerable elevation of chimney will be needed to ensure free course for the heat on this unnatural and consequently difficult tack. The simplest method would be to heat from the bottom upwards, and the cold would seldom injure the upper portion of the wall while the heat was creeping up to master it. Flued walls need not be much more expensive than common and hollow walls, while their greater thickness makes them better. They may be rendered much more effective if the wall surface is broken by piers or pillars. By training Vines only on the sunk panels or portions of the wall cold winds would sweep right over them. Wide projecting coping would be doubly effective. The projecting piers likewise should be fully furnished with hardier fruits or flowers trained on the long spur or loose mode, and these would still further shelter the tender Vines in the recesses of the walls. Many of the advantages of panels may be reaped on a common 4½ or 9-inch wall. It is a common

practice to buttress such walls in order to give them strength; instead of the usual angular buttress, however, pillars might be used at intervals. These projecting pillars furnished as already indicated would check and break the force of the wind off the smooth portion of the wall and prove an efficient protector to Vines and other tender fruit growing upon it. By sinking walls again and sloping the borders on one or both sides a great amount of shelter is obtained, and heat husbanded. The north-east or other cold winds are sent clean over the top of the wall by the shelter of the raised border, and the reflection of heat from the latter on to the face of the walls is very great. Were glass walls used, their ameliorating effects on the local atmosphere would be still more powerful, as most of the heat passed through would be reverberated back on to the walls again and again. This mode of conserving and utilising the heat of the ground, and forcing it to contribute to the warming of the wall, has been but little used. It is nevertheless one of the readiest and cheapest means of maintaining a superior local temperature in the open air. The steeper the banks and the higher, the longer the wall will be in cooling. The wall and the contiguous earth naturally warm each other.

Hypocaust heating might also be employed with advantage; it is the most primitive of all methods of raising the temperature of the earth and the atmosphere. An artificial cellar is formed under the place to be heated, of equal or lesser area. A fire is made in one portion of it, and the smoke and all the spent products of combustion are compelled to make the circuit of the entire area, and thus to give up their heat, wholly or nearly so, before any of it escapes. The chief difficulty and expense is the formation and maintenance of a false bottom to support the earth or floor of the area to be warmed. The cellar underneath should be from 18 inches to 2 or more feet high. The furnace must be accessible from the outside, and may consist of only a few bars of iron laid above the floor, on which stumps of trees, prunings, and any refuse that will burn, could be placed. The chimney, or place of exit for smoke, should be on the basement level, at the furthest point from the furnace, so that the warmth may play all round the place without escaping. The flooring is formed of thin slabs of stone or slate, or artificial slabs formed with a mixture of flat tiles and cement. These, 2 feet or a yard square, could be supported on 9-inch brick pillars. This done, the soil is laid on from 18 inches to 2 feet or more in thickness, and the Vines planted. If more surface heat is wanted than will arise through the border, a few bits of the flooring may be left unearthened, when a strong heat will ascend. Or open pillars or glazed water-pipes could be carried up through the earth to the surface, their lower mouths being placed on the floor of the hot cellar. By clearing larger patches of the floor, even hothouses may be sufficiently heated in this way; and Pines have been successfully cultivated with no other means of furnishing either top or bottom heat than this. There is, however, considerable danger of subtle gases creeping through. This danger is increased where coal is used for heating. In such cases, too, the floor would have to be thicker over the furnace than elsewhere. Indeed, hypocaust heating is not to be recommended for hothouses; but for Vine walls and borders in the open air it might often be of great service. The earth and roots together would absorb a good amount of any gases that might escape through the border, and with ordinary care there would be little risk of an excess of heat. Liberal watering—and Vines in free growth can hardly be overwatered—would counteract the drying action of the subterranean heat. Of course hot-water pipes would be safer and better, but hypocaust heating is possible to thousands who can never possess hot water. Were the heated borders made on a southern slope, the effect would be doubled; the sun above and the fire beneath would, by their joint action, ripen Grapes in the open air throughout the greater portion of the three kingdoms. Those who cannot afford a furnace might, nevertheless, have their cellar under their Vines, and heat it more safely and genially with dung. A couple of loads of rank horse manure shunt up beneath a Vine border does marvels to warm and enrich the earth. With this more bulky heating agent more head-room would be required, as the oftener it is stirred the hotter it proves. Perhaps 4 or 5 feet head-room would be requisite to work and heat a hypocaust properly with fermenting manure. But the floor need not be fire or gas proof; on the contrary, a few rough posts and rougher rails, with a layer of bush faggots to prevent the turfy loam running through, might constitute all the floor that would be needed. Lay 18 inches or 2 feet of soil on these, and warm the whole with steaming manure turned twice a week from March to the end of May. The residuum might then be converted into Mushroom beds, and the dung cellars thus be fruitful in heating and nourishing the Vines and yielding a crop of Mushrooms afterwards. There is yet another method of warming the ground and walls or detached pillars, admirably adapted for helping Vines to grow or Grapes to ripen in

the open air. Place a furnace at the lower end of a flue, either on the level of the ground, raised above, or sunk under it from 1 to 3 feet. At intervals of 4, 6, 9, or 12 feet erect hollow pillars, round, hexagonal, octagonal, or square. The pillars should be 18 inches or 2 feet in diameter, and should be built of $4\frac{1}{2}$ or 9-inch brickwork. By regulating the size of the orifices of the vertical flues at the point of union with the horizontal ones, or by placing a damper in each, any pillar may be specially warmed or not at pleasure, or all may be heated alike. The bottom will warm the border for the roots, or by keeping it upon or above the surface help to heat the atmosphere only. Such pillars might be wreathed with Vines, and furnished with vases at the top. The smoke issuing from the mouth of each vase might be considered to mar the beauty of this arrangement; but fires are only needed in spring and autumn. Upright cordons might be used instead of the wreathing mode of training, keeping one or more Vines to each aspect, and thus a considerable succession of fruit might be gathered from one pillar. The hot ground over the flues would be a rare place for ground cordons, and were the latter covered with glass the Grapes would come in from a month to six weeks before those on the heated columns. Where underground heating is employed, great caution is needed not to over-heat or over-dry the roots. Vines in active growth can hardly be over-watered, and this is especially true of those growing in heated borders, especially if heated by hypocaust or flues. Hot-water is somewhat less drying; but all modes of warming the earth beneath roots, unless by tanks or hot dung, involve the necessity of special and extra watering. Nor must it be supposed that artificial heat is universally needed in order to produce good Grapes in the open air. It is only necessary in unfavourable localities or seasons, or for the growth of superior varieties in greater perfection.

(To be continued.)

CHASSELAS.

Fruiting Pines.—In giving descriptions of places in which Pine growing is extra well done, writers in gardening papers, as a rule, remark that they (the Pines) have been fruited within the year, a statement likely to mislead employers, who wonder why their gardeners cannot do the same. Pines may be fruited within the year, but a considerable time (say four months) must elapse after that before, even under favourable circumstances, they are ripe. A fruit, therefore, showing at twelve months and one ripe at that age are two very different things. If some of our veteran Pine growers would kindly give us their experience on this subject, I feel confident that many readers of THE GARDEN besides myself would peruse their remarks with much interest. If we exclude Mr. James Barnes, whose calendar of operations in your paper is admirable, the Pine-apple receives but little notice from writers on gardening of the present day. My system of culture is to get as fine strong suckers as possible, and to pot them firmly in fibry turf in 32 and 24-sized pots. Plunged in a brisk bottom heat of about 90° they quickly become established, especially if the soil is kept moderately dry and the atmosphere of the pit moist by means of frequent light syringings, particularly over the hot-water pipes. They are then shifted into their fruiting pots, measuring from 10 to 12 inches in diameter, and as soon as they get thoroughly established they are removed to the fruiting stoves. These we never shade, for if the plants are healthy they enjoy all the sunshine we get. Our aim is to obtain well-formed evenly-swelled fruit with small crowns. And growers who can do this and have on their whole stock fruit fit to cut or even swelling in eighteen months from the time of taking off the suckers, will be well repaid for their labour.—J. GROOM, *Henham Garden, Suffolk.*

NOTES AND QUESTIONS ON THE FRUIT GARDEN.

Standard Gooseberries and Currants.—These are grown as standards to a considerable extent in Bohemia and Moravia, the trees being grafted on stocks of *Ribes aureum*, which has been found to produce vigorous and fertile specimens.

Early Ripening of Pears.—Easter Buerré, Glou Morcean, and Passe Colmar Pears, which for four seasons past have not been ripe until February and March, are now (December 6th) all fully ripe: thus leading one to suppose that damp wet summers furnish water instead of sugar, the flavour being certainly not so fine as usual.—R. GILBERT, *Burghley.*

Keeping Apples in Gypsum.—Mention has been made of the success of packing Apples in plaster or gypsum, and of the freshness of the specimens when taken out late in spring. This substance possesses several properties which peculiarly fit it for the purpose. It is soft in texture even before it is ground to powder, and this not only prevents anything like grit or harshness, but causes it to pack more closely than almost any other pulverised substance which could be found. It thus presses softly on the surface of the fruit, and excludes completely the external air. Being a poor conductor of heat, it keeps the fruit at an even temperature, so essential to its sound preservation. These are the qualities which render it so useful, and not anything connected with its chemical composition, which is not at all affected by the presence of the fruit.

THE FLOWER GARDEN.

SPRAGUEA UMBELLATA.

It is a trite observation that whilst many plants so fully display their charms as to leave little or nothing to the imagination, others possessing equal or greater interest for the general lover of the vegetable kingdom, are far more chary of their exhibition, and yield up their attractions only to a close scrutiny. To the latter class undoubtedly belongs the remarkable *Spraguea umbellata*, one of the many introductions of recent years from the flower-clad slopes of sunny California. But though lacking, externally at least, the gaudy hues which characterise certain older and better known members of the *Portulaca* family, a well-developed specimen of this plant never fails to catch the eye of those to whom it is a stranger; its singular imbricated spikes, with their semi-transparent orbicular calyces, through which the purple-crimson of the miniature petals is faintly visible, producing an effect too unique to be overlooked.

To those hitherto unacquainted with this plant the accompanying admirable illustration will convey an excellent idea of it. The tuft of spatulate fleshy foliage, the naked erect stems bearing at their summit an umbel of the characteristic spikes, the details of intimate structure, including the two-leaved calyx, the four petals with their associated three stamens and bifid style, and lastly the two-valved capsule with its glossy kidney-shaped seeds, are they not all portrayed in a style which he who runs may read? The genus is closely allied to *Claytonia*, and is named in compliment to Isaac Sprague, an eminent American botanical artist.

In a cultural point of view the *Spraguea* may be described as annual or biennial, according to the treatment which may be given it. Sown early in February in a greenhouse, pricked out singly in small pots and planted out in May, the seedlings will bloom in August and September. If sown in May the plant will not flower till the following summer. In light soils it will resist an ordinary winter, but on the whole it is best protected in a frame. Like most tap-rooted plants it does not bear transplantation well except while small. If seeds were plentiful they might be sown in the open ground, and stronger plants would result, but being usually scarce, sowing in pots in a moderate temperature is to be preferred. T.

CLEMATISES.

It has been well observed that "the Clematis has lately been converted from an ordinary climbing shrub—handsome indeed in some, and elegant in all, its forms—to one of the most gorgeous of garden ornaments, unrivalled as a flowering woody climber; while for walls or conservatory decorations generally, for poles and pyramids, for rockeries and rooteries, it is infinitely improved, and as a bedding plant affords altogether a new sensation in flower gardening." I think the time is not far distant when hardy Clematises will be as common in villa and in cottage gardens as we now find *Jasminum nudiflorum*, *Pyrus japonica*, or *Cratægus pyracantha*. On the front of my house I have grown two of these—the well known and valuable *C. Jackmanni*, and the less valuable *C. Prince of Wales*—for the past four years, and now the plants are very strong indeed. The most indifferent to the value and charms of flowers are struck with the beauty of these plants when in full bloom in July and August, and constant inquiries are continually being made as to where the varieties can be obtained, so great a desire is there to cultivate them. A selection made from the varieties in cultivation would give a succession of flower from April down to the middle of October. Such a selection should embrace the following: Albert Victor, deep lavender, with pale bars; *Azarea grandiflora*, white bordered with violet; Lady Londesborough, silver-grey, with pale bars; Miss Bateman, white, with chocolate red anthers; Lord Londesborough, delicate mauve, with red bars; and Standishii, light mauve violet. It should be distinctly understood that all the foregoing are spring-bloomers, and produce their flowers on the ripened wood of the previous year, and therefore this wood must not be pruned back as in the case of the summer-blooming kinds. The importance of cutting back the latter is so strongly insisted on, that those unacquainted with the fact that other types bloom early on the old wood are apt to cut all back, and lose their flower in consequence. Then there is the Florida type, which, like the foregoing section, flower from the old or ripened wood; and this includes the old creamy-white Sieboldi with its showy



SPRAGUEA UMBELLATA.

1. Plan of the flower.—2. A flower, magnified.—3. One of the sepals, magnified.—4. A petal, more magnified.—5. A stamen, seen in front, magnified.—6. The pistil, showing a longitudinal section of the ovary, more magnified.—7. A ripe dehiscent capsule, with the persistent sepals, equally magnified.—8. A seed, highly magnified.—9. Longitudinal section of the same.

creamy-white flowers having branches of purple-coloured anthers in the centre, and such double varieties as Florida plena, Fortunei, and John Gould Veitch. All the spring-flowering varieties, though quite hardy, are yet less robust than the strong-growing summer-blooming forms, and when cultivated in the open air should be grown on south or west walls, or be trained to pillars in warm sheltered positions. The double varieties should be planted out in cool conservatories, or be grown in pots. Late spring frosts prove very injurious to them when grown in the open air, and they suffer much in consequence. Like the foregoing, all the varieties of the Lanuginosa type, though summer bloomers, yet require sheltered positions when grown in the open air. Cool conservatories are rendered very gay where they occupy the pillars or walls of such buildings, and it is under glass that their large flowers are produced with so much fineness of character. Gem, deep lavender blue; Lady Caroline Nevill, French white, with mauve bars; Lanuginosa, pale lavender; Lanuginosa nivea, pure white; Otto Frebel, white tinted with pale greyish lavender; and the following varieties, raised by Mr. Henry—Lawsoniana, rosy purple, with slight veins of a darker shade; Henryii, creamy white; and Symesiana, pale mauve. The three foregoing are remarkable for the large size of their flowers. The varieties of the Viticella type are all free and successional bloomers, but they are not so continuously prodigal of bloom as the Jackmanni section. Lady Bovill, greyish blue, a beautiful variety; Mr. James Bateman is pale lavender; Thomas Moore, deep rich reddish violet, very fine; and Viticella rubra grandiflora, remarkably fine, the latter giving a red hue that is very novel and distinct. The Jackmanni section contains Alexandra, pale reddish violet; Jackmanni, intense violet purple, one of the earliest raised, and among the very best; Magnifica, reddish purple with red bars, quite distinct, but not so showy as some of the others; Rnbella, rich claret purple; Star of India, reddish plum, with red bars; Tunbridgensis, deep blueish mauve, very fine; and Velutina purpurea, rich blackish mulberry purple.

The varieties included under the Lanuginosa section should be sparingly pruned in the spring, regard being had to the space the plants are required to cover. If the growth has to be kept in certain bounds, they must be pruned back accordingly. The varieties of Jackmanni should be pruned back at mid-winter to four or five eyes, and these can always be found within a foot of the ground. It is the fashion of some who grow C. Jackmanni not to prune at all; but the flowers do not come nearly so fine, and every succeeding year the blossoms get farther removed from the trunk of the plant, as the strongest shoots invariably start from the wood farthest removed from the root when it is not cut back. All the Clematises can be planted at any time between September and April, but the spring-flowering varieties ought to be planted by Christmas. In all cases they should have a rich free soil, and every succeeding winter some good old rotten stable manure should be forked in about the roots, and a top-dressing of the same should be given during the summer. The exceedingly free growth made by nearly all these Clematises makes the act of training them to walls a matter of difficulty, as so many shoots require nailing; and it will frequently happen that a high wind will tear foliage, nails and all, away from the wall. This was my own fate on two or three occasions, and it led to my adoption of a plan that I can recommend with confidence to growers of Clematises on walls. I obtained pieces of galvanised iron wire, the mesh about 3 inches in width. This was made to a specified size at a very small cost per yard, and it was stretched on the wall and fastened to some strips of deal, an inch and a half in thickness and the same in width, previously placed on the wall in the form of a framework, and securely fastened by strong nails. All that is required is that the shoots should be properly directed, as the strong tendrils soon twine themselves about the meshes of the wire, and cannot be torn from it by the wind. I have also grown several of the varieties trained to nice, straight Hop-poles 10 feet in length, and driven into the ground to the depth of 18 inches. Treated thus, the plants form excellent pillars of bloom, but when a tie of the bino is made to the pole a nail should be driven in, to fasten the tie to, and so keep the weed in position. Hop-poles that have been dipped in creosote will last for several years. The plants so trained are mulched with rotten manure once or twice during the summer, and freely watered in dry weather.

The Clematis is occasionally grown as a bedding plant, pegged down. It forms a remarkably showy and attractive mass when grown in this way; but there is a necessity for some early spring-flowering hardy herbaceous plant being mingled with the Clematises, otherwise the beds have a very naked appearance for a considerable period of the year. The plants should be cut back close in the autumn, and a good top-dressing of manure supplied, and lightly forked in. The forms and colours of the flowers of these Clematises surpass in splendour by many degrees the handsomest of the hardy kinds hitherto known to cultivators.—R. D.

ADIANTUM PEDATUM.

THIS is unquestionably one of the most distinct and beautiful of the hardy Ferns at present in cultivation. It is a native of North America, where it grows abundantly in the woods and forests, delighting in the shade of trees, and in the cool moist deposit of rich leaf-mould which is found beneath their branches. The stems are slender, black, and polished, rising erect to a height of from 9 to 15 inches, and bearing at the summit forked fronds, recurved almost horizontally, the divisions of which are all on one side, and are usually seven or eight in number. The pinnules are of a triangular-oblong shape, and appear as if halved, being entire on the lower margin, from which all the veins proceed, and cleft and fruit-bearing on the other. This charming Fern is particularly suited for the lower and shaded parts of rockwork, or the shaded parts of borders and shrubberies, where it can enjoy a cool, moist, peaty or vegetable soil. It also forms one of the finest ornaments of the conservatory, for which purpose it should be potted in a mixture of peaty loam and leaf-mould.



Adiantum pedatum.

The plant is easily multiplied by division of the tufts. This is best done in autumn, and care should be taken not to injure the roots. Pot the divisions in peaty loam and leaf-mould, and put them under a frame for the winter. In the following spring they may be planted out.

VIOLET CRESS (IONOPSIDIUM ACAULE).

How dull and cheerless just now is the aspect of garden and flower ground! Outside stove or conservatory the eye wanders in vain for any object of floral interest, unless perchance it may rest upon some pale, solitary Rose or other unseasonable straggler, which only serves to make the floral solitude more lonely, and the decay and sleep of nature felt more sensibly. Amid this desolation and quiescence of plant life, it is, to any one who can feel and appreciate it, an agreeable surprise and a joy to come upon a hardy little plant beauty which, at this inclement season, all healthy, verdant, and vigorous, puts forth its modest charms in the shape of flowerets innumerable, and continues to do so far into dreary winter. Such a hardy little gem is to be found in the lowly, cushion-like Violet Cress of the south of Europe—*Ionopsidium acaule*. From its neat, low-growing habit, it is also sometimes called the Carpet-plant, and in suitable situations it, no doubt, is well calculated, with such things as *Arenaria balearica* and the *Sedums*, to play a part on that recent and somewhat fashionable phase of modern flower gardening yecept "carpet bedding." Individually a plant of this pretty little crucifer (flowers, leaves, and all) might be covered by a florin, and yet in that small compass are leaves innumerable and flowers in profusion. The leaves are deep green, roundish or somewhat reniform, and compactly arranged. The flowers, which are produced in great abundance and continuous succession, are of a delicate pale violet or lilac tint. Collectively, the plant assumes the appearance of a dense green cushion, with its surface thickly powdered over with delicate, pale, tiny lilac flowerets. A small bed of this plant is, at this season, a very pretty and telling object; and as it also does very well grown in pots, anyone who is fond of window gardening could not take under his care a more interesting or pretty subject. Its place in the garden is a bed or border with a north aspect, or it will be quite at home on the shaded side of rock-work. The soil most suitable is that of a peaty character. It is an annual, and flowers in a very few weeks after the seed is sown. Once established it seeds abundantly, sows itself, and comes up freely, so that it assumes a perennial character. In the American garden, at this season, our plant might be made very effective use of by stringing the beds with small bosses of it at short intervals. If, however, we

can but induce our practical friends to make the acquaintance of this charming little hardy winter-flowering plant, it is enough for us; its whereabouts and combinations may be safely left to their good taste. Our object simply is to draw attention to it, and ask for it the place which it appears to us to deserve among the materials available for the floral decoration either of the winter and spring garden or the dwelling-house window. Seeds of it may be sown either in autumn or spring. When sown in the latter season it soon flowers and ripens its seeds, which, shedding quickly, germinate and produce a crop of plants which flower in autumn and continue to do so through a great part of the winter. In this way it is almost perennial in habit and perpetual in flowering. Though far from being a new plant, it is neither so familiarly known nor extensively grown as it certainly deserves to be.—*Irish Farmers' Gazette.*

THE YEAR.

First came the small green leaves
Down in the ditch,
Then with their buds of brown
Hedges grow rich.
Celandines peeped out soon,
One here and there;
Then came sweet Violets,
Scenting the air.
Birds with their chosen mates
Built their nests next,
Lambs at the first spring rain
Looked much perplexed;
Then came a burst of green,
Sunshine and shower,
Fields full of Cowslip buds,
Born in an hour.
Deep in the Hawthorn hedge
Under the eaves:
Low in the banks, and snug
Under green leaves,

But the sweet springtime passed! passed! passed!
Buds opened into flowers—
Lambs grew, and birds; they could not last,
Those busy bounding hours.

Then summer came, and
The passing breeze
Made pleasant music
In leafy trees;
The sweet wild Roses
Threw scents about,
The bees came humming
To find them out.

Thousands of flowers
Where late one grew,
Thousands of pearl drops
Early dew;
Coolings of wood doves,
Deep in shade;
Brilliant concertos
Small birds made.

But the sweet summer passed! passed! passed!
The leaves fell off the Rose.
Flowers died—birds hushed; they could not last,
Sweet sunny hours like those.

Then came the wonders
Of red and gold,
To comfort the year
In its growing old:
Ripe fruits in hedges
For birds and men
Fine times for squirrels
And field-mice then.

Fine time for squirrels!
Such nuts there grew;
They gathered stores
Without much ado.
The mouse's granary
By old tree roots,
Was crammed with acorns
And grains and fruit.

But the sweet autumn passed! passed! passed!
The gold and jewels fell:
Bare sprays, brown trees, they could not last,
Those days we loved so well.

And now there's nothing
But branches bare,
The air is silent,
No songs are there.
The birds have nestled
In holes, or died;
Flowers all the winter
Their heads must hide.

But winter will not always last,
Snow will not lie there long,
After the loud voice of the blast
Will come the sweet birds' song.
The year is dying: ere it's gone,
There is a song to raise!
Young voices join; no sound so sweet,
As voices joined in praise.

Eggs green and blue there were
Speckled and white,
Brown ones and scribbled ones,
All out of sight.
Little ones peeping,
Tiny bright eyes;
Yellow beaks gaping
All for one prize;
Chirpings and practisings,
Fights in between—
Oh, what a busy world,
Hid in the green!
Mothers with beating hearts,
Fathers more brave,
Tender to rear the brood,
Valiant to save:
Joyful the livelong day,
Sleeping all night;
Dreaming of work to do
With the first light.

Tangles in leafy dells,
Woodbine made those;
Trailing and twisting
About the Rose;
Hums of the insect world
Near the great trees,
Through all the toils of life
Much at their ease.

Flocks lying down to rest
In shady nooks;
Cows looking grave, as if
Making deep books;
Cacklings in poultry yards
Heard far away;
Oh, what a world in one
Long summer day!

The Bryony wreaths
And the nosegays gay
Of coloured leaves
And a scarlet spray;
The crisp bright weather,
The smoke so blue;
And the cawing of rooks
About things they knew.

The merry gleaners
With heaps of corn;
Fresh carpets of leaves
In the frosty dawn;
The clear sweet music
Of robin's song;
Oh, lovely was autumn
The whole day long!

The ground is white
With the falling snow,
And cold and cheerless
The north winds blow.
The sky is dreary
Overhead;
Oh, stern dark winter,
The world lies dead!

HARDY HEATHS AS BEDDING PLANTS.

You have rendered good service to the gardening world by directing attention to, and bringing into more general cultivation than hitherto, many old favourite perennial, herbaceous, and Alpine plants. I am not surprised to find that after a few years' trial of ordinary summer bedding plants, amateurs are returning to their old favourites again. For several years past, many of the Verbenas and Calceolarias used for bedding have not produced the effect they used to do, and many others, depending on the season, are far from being satisfactory; so much has this been the case, that foliated plants have become more and more fashionable. In large establishments, with plenty of glass accommodation, this is all very well, but almost impossible with amateur cultivators.

My object now, however, is to direct attention to a system of bedding which was successfully carried out about thirty or forty years ago, but now much neglected; I mean the employment of hardy Heaths for bedding purposes. Of these a considerable variety now exists in cultivation, and mixed clumps of them might be arranged so as to have some of them in flower all the year round, or clumps might be formed containing one variety only, which would be preferable. The double-flowering *Ling* (*Calluna vulgaris*), which used to form long and much-admired edgings, is rarely now to be met with. Numerous beautiful varieties of the single-flowered *Calluna vulgaris* are admirably adapted for bedding purposes, as are also the varieties of the Cross-leaved Heath (*Erica tetralix*), and the bell Heath (*Erica ciurea*). In addition to these we have the varieties known under the names of *Erica ciliaris*, *E. Mackayana*, *E. Watsonii*, also *E. carnea*, *E. vagans*, and *E. multiflora*. The varieties of the Irish Heath, of the *E. mediterranea* breed, are also numerous, and flower at various periods. The varieties of hardy Heaths have hitherto consisted of mere accidental forms and colours, found in a state of nature; but if cultivators fond of this class of plants would take them earnestly in hand, numerous varieties might be produced by hybridisation, which would amply repay the trouble taken to raise them. It is possible that hybrids might be raised between the existing British varieties and some of the hardy European species, such as *carnea*, *stricta*, *arborescens*, *umbellata*, and *australis*; or even the pollen of some high-coloured Cape species might be employed for this end with good results. The various species of *Menziesia* or *Daboecia* are also admirably adapted for bedding purposes; and when it is remembered that *Bryanthus erectus*, an interesting and free-flowering hybrid, was raised between *Menziesia empetrum* and *Rhododendron Chamæcistus*, it is not improbable that a cross may be produced between a *Menziesia* and some of the hardy Heaths now in cultivation. This *Bryanthus erectus*—a name which it had no right to assume, being previously occupied by another dwarf Ericaceous plant—was raised some thirty years ago by the late Mr. James Cunningham, of the Comely Bank Nurseries, at Edinburgh.

All the hardy Heaths are readily propagated by means of cuttings or layers. Cuttings which I think make by far the best shaped plants are readily struck if placed any time during the autumn months in a sand bath in a cold pit, provided they are not exposed to the sun. In such a situation they soon root and start into growth. When rooted and hardened they could be planted out in lines, but I prefer putting them round the edge of pots and placing them in a cold frame partially shaded for a time from the sun. As soon as established the points of the top shoots should all be cut off, when side branches will be freely produced, which will give them a compact habit of growth. After being some months established in pots and sufficiently hardened, they can then be planted out in rows in open air beds, leaving about 6 or 7 inches between plant and plant. When the young shoots have pushed about a couple of inches cut the tops off again, which we generally do during the following spring with a pair of spring or sheep shears. Such plants will soon be ready to place in the bedding compartments intended for their flowering.

In nurseries hardy Heaths are generally propagated by means of layers, an operation easily accomplished, by placing some peat freely mixed with sand in the middle of the plants, which when rooted are torn in pieces and planted out in nursery rows. Many species do well in this way, but the

generality of them flower better when raised from cuttings, besides being better shaped. The single stem of the cutting-made plants seems to favour the shape and the flowering, while layers in many cases have several stems, and scarcely two plants are of exactly the same shape, while with cuttings all the plants are the same, and therefore better adapted for bedding purposes. If the autumn flowering hardy Heaths are regularly clipped over in spring they will form nice round patches and produce flowers abundantly, while the spring or summer flowering varieties should always be cut over as soon as possible after the flowering is past; if this is done they will branch out freely and regularly and flower abundantly the following season. When the plants become old they are apt to assume a tall and wiry condition and to flower imperfectly. It is therefore necessary that young plants should always be coming on to take their place. It is not absolutely necessary that hardy Heaths should be grown in peat soil. A mixture of peat and loam, or leaf-mould and sand, will answer the purpose. Where peat is scarce sand ought to predominate.

The beauty belonging to clumps of hardy Heaths, some of them of great age, as seen on our highland moors and pastures, is owing to the plants being annually eaten over by sheep, particularly during winter and spring, a circumstance which makes them branch and flower in dense hemispherical masses. When under cultivation clipping has exactly the same tendency. If hardy Heaths are regularly cut they will keep in good flowering condition for many years; but if neglected or left to themselves a very few years will see them long and lanky and totally unfit for bedding purposes.

JAMES McNAB.

Royal Botanic Gardens, Edinburgh.

MR. RUSKIN ON FLOWERING BULBS AND THEIR ALLIES.

THEY are divided into five great orders—Lilies, Asphodels, Amaryllids, Irids, and Rushes. No tribes of flowers have had so great, so varied, or so healthy an influence on man as this great group of Lilyworts, depending not so much on the whiteness of some of their blossoms or the radiance of others, as on the strength and delicacy of the substance of their petals, enabling them to take forms of faultless elastic curvature, either in cups, as the Crocus, or expanding bells as the true Lily, or Heath-like bells as the Hyacinth, or bright and perfect stars like the Star of Bethlehem, or where they are affected by the strange reflex of the serpent nature, which forms the labiate group of all flowers, closing into forms of exquisitely fantastic symmetry in the Gladiolus. Put by their side their Nereid sisters, the water Lilies, and you have in them the origin of the loveliest forms of ornamental design, and the most powerful floral myths yet recognised among human spirits, born by the streams of Ganges, Nile, Arno, and Avon. For, consider a little what each of those five tribes has been to the spirit of man. First, in their nobleness, the Lilies gave the Lily of the Annunciation; the Asphodels, the flower of the Elysian fields; the Irids, the fleur-de-lys of chivalry; and the Amaryllids, Christ's Lily of the field; while the Rush, trodden always under foot, became the emblem of humility. Then take each of the tribes, and consider the extent of their lower influence. Perdit's "The Crown Imperial, Lilies of all kinds," are the first tribe, which, giving the type of perfect purity in the Madonna's Lily, have, by their lovely form, influenced the entire decorative design of Italian sacred art; while ornaments of war were continually enriched by the curves of the triple petal of the Florentine "giglio" and French fleur-de-lys; so that it is impossible to count their influence for good in the middle ages, partly as a symbol of womanly character, and partly of the utmost brightness and refinement of chivalry in the city, which was the flower of cities. Afterwards the group of the turban Lilies or Tulips did some mischief (their splendid stains having made them the favourite caprice of florists); but they may be pardoned all such guilt for the pleasure they have given in cottage gardens, and are yet to give, when lowly life may again be possible among us: and then the crimson bars of the Tulips in their trim beds, with their likeness in crimson bars of morning above them, and its dew glittering heavy, globed in their glossy cups, may be loved better than the grey nettles of the ash heap under grey sky, unveined by vermilion or by gold. The next great group of the Asphodels divides itself also into two principal families, one in which the flowers are like stars, and clustered characteristically in balls, though opening sometimes into looser heads; and the other, in which the flowers are in long bells, opening suddenly at the tips, and clustered in spires on a long stem, or drooping from it when bent by their weight. The star group of the squills, Garlics, and

Onions, has always caused me great wonder. I cannot understand why its beauty and serviceableness should have been associated with the rank scent which has been really among the most powerful means of degrading peasant life, and separating it from that of the higher classes. The belled group of the Hyacinth and Convallaria is as delicate as the other is coarse. The unspeakable azure light along the ground of the wood Hyacinth in English spring; the Grape Hyacinth, which is in South France as if a cluster of Grapes and a hive of honey had been distilled and compressed together into one small boss of celled and headed blue; the Lilies of the Valley everywhere in each sweet and wild recess of rocky lands: count the influences of these on childish and innocent life; then measure the mythic power of the Hyacinth and Asphodel as connected with Greek thoughts of immortality; finally, their useful and nourishing power in ancient and modern peasant life; and it will be strange if you do not feel what fixed relation exists between the agency of the creating spirit in these, and in us who live by them. The Crocus, Narcissus, and Amaryllis lutea, the "Lily of the field" (I suspect, also, that the flower whose name we translate "Violet" was in truth an Iris) represented to the Greek the first coming of the breath of life, or the renewed herbage, and became in his thoughts the true embroidery of the saffron robe of Athena. . . . But the golden Lily and Crocus, together with the Asphodel, retain always the old Greek's fondest thoughts; they are only "golden" flowers that are to burn on the trees and float on the streams of paradise.—*The Queen of the Air.*

NOTES AND QUESTIONS ON THE FLOWER GARDEN.

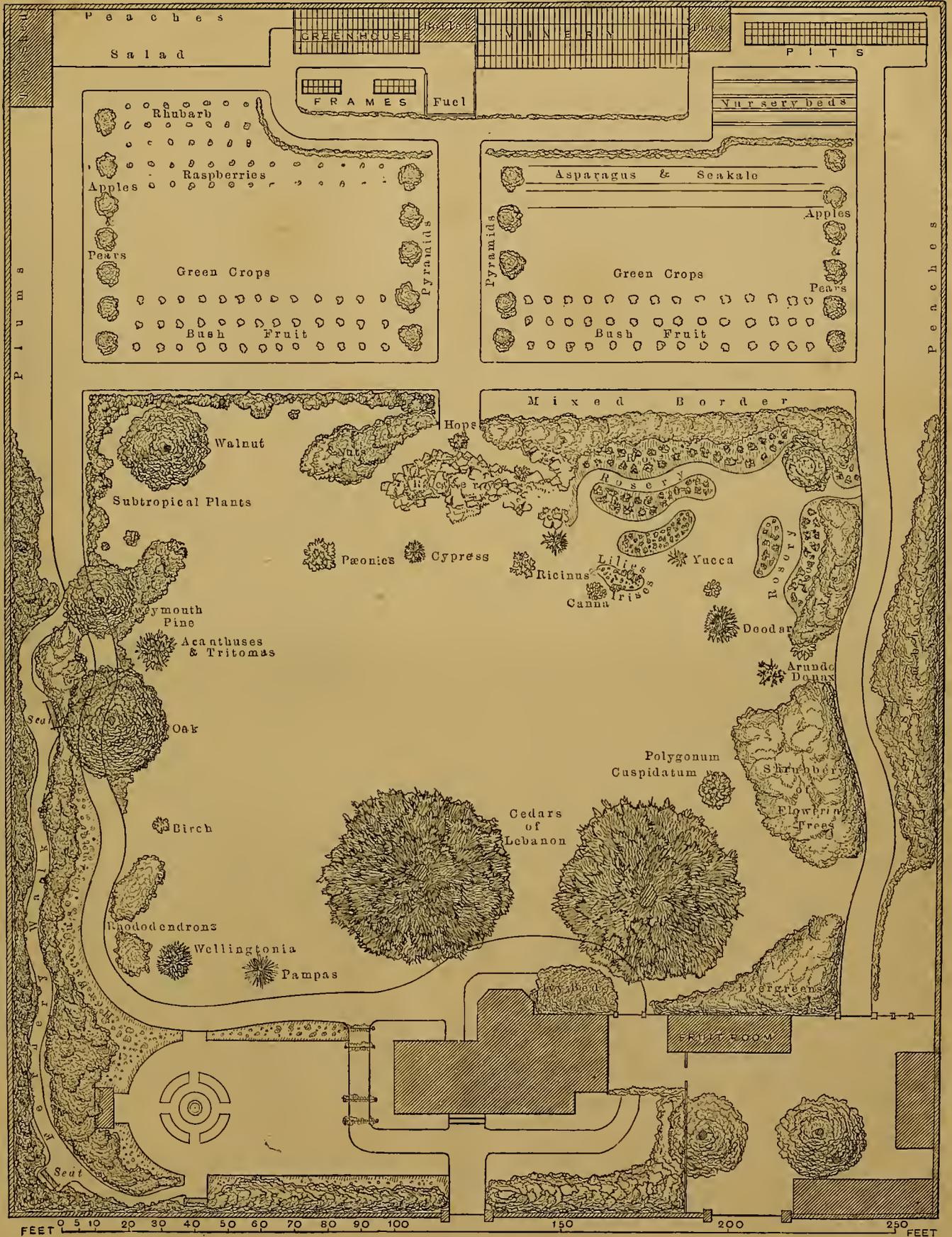
Aponogeton distachyon.—I saw a great patch of this fine aquatic several yards square, blooming freely in the Edinburgh Botanic Garden in the beginning of last May. The plant was out of doors, in the "aquatic pond," and looked the picture of sturdy health and vigour. It is a native of Southern Africa, but will bear the severity of our ordinary winters. Its flowers are blackish, subtended by thick bracts of a pure and shining whiteness.—F. W. B.

Dracæna indivisa.—This is stated to be perfectly hardy, and a noble object in the South of England and Ireland. At Falmouth it is not perfectly hardy, although cultivators in the North would be surprised to know how many things, which they consider as greenhouse plants, are treated as hardy with us. *D. indivisa* will stand out of doors during ordinary winters frequently, but it gets occasionally cut down to the ground, when, however, it always throws up suckers from the old stool, as Yuccas do when cut or blown down. I have known instances in the South of England, when, after attaining a height of over 14 feet, this *Dracæna* has been cut to the ground by frost.—J. D. MITCHELL

GARDEN DESIGN.

A LONDON VILLA GARDEN.

THAT "in small proportions we great beauties see," is pretty well illustrated in the illustration and plan which we publish this week of a garden at Chiswick. It is a very small garden, yet, as the plan and view show, one gets a breadth and repose in the little lawn which is looked for in vain in some larger and much more pretentious gardens. In both plan and view we see how, by the aid of trees and plants alone, and without any attempt at diversifying the surface of the ground itself, the bareness and the stiffness may be stolen from an oblong morsel of ground, and an effect attained almost as good as that which we enjoy in a wide park or large garden. It is needless to explain how this is done in words when the plan taken specially for THE GARDEN shows it so fully. The garden is a good example of what may be done by hardy plants and trees alone, for though there is provision for a few bedding plants, the beauty of the place entirely depends on hardy subjects. There are a couple of fine old Deodars, which lend much beauty to the garden, though, placed as they are very near the house, they are not in the best positions. Like effects will often be noticed in time to come, resulting from the way in which young plants of the largest growing Conifers are placed near windows. The way in which the walk that runs so conveniently round the garden is managed is worthy of the attention of landscape gardeners in France and elsewhere who appear to take all the pains they can to expose the ugly surface of the walks. The variety and beauty displayed around the open little lawn are also notable. Not only are there many objects of beauty and interest displayed on it, but the surroundings are well shut out by the trees, which also conceal the small kitchen and fruit garden behind. The names of the various objects being engraved on the plan, precludes the necessity of further description. The garden is the property of Mr. Dawson, and Mr. A. Dawson has drawn both the plan and view.



PLAN OF A LONDON VILLA GARDEN.

THE ARBORETUM.

ASA GRAY ON GEOGRAPHICAL DISTRIBUTION.

If we compare, as to their floras generally, the Atlantic United States with Japan, Mandchuria, and northern China, *i. e.*, Eastern North America with Eastern North Asia—half the earth's circumference apart—we find an astonishing similarity. The larger part of the genera of our own region which I have enumerated as wanting in California are present in Japan or Mandchuria, along with many other peculiar plants divided between the two. There are plants enough of the one region which have no representatives in the other. There are types which appear to have reached the Atlantic States from the South, and there is a larger infusion of sub-tropical Asiatic types into temperate China and Japan; among these there is no relationship between the two countries to speak of. There are also, as I have already said, no small number of genera and some species which, being common all round or partially round the northern temperate zone, have no special significance because of their occurrence in these two antipodal floras, although they have testimony to bear upon the general question of geographical distribution. The point to be remarked is that many or even most of the genera and species which are peculiar to North America as compared with Europe, and largely peculiar to Atlantic North America as compared with the Californian region, are also represented in Japan and Mandchuria, either by identical or by closely similar forms. The same rule holds on a more northward line, although not so strikingly. If we compare the plants, say of New England and Pennsylvania (lat. 45°—47°) with those of Oregon, and then with those of North-eastern Asia, we shall find many of our own curiously repeated in the latter, while only a small number of them can be traced along the route even so far as the western slope of the Rocky Mountains. And these repetitions of Eastern American types in Japan and neighbouring districts are in all degrees of likeness. Sometimes the one is undistinguishable from the other; sometimes there is a difference of aspect, but hardly of a tangible character; sometimes the two would be termed marked varieties if they grew naturally in the same forest or in the same region; sometimes they are what the botanist calls representative species, the one answering closely to the other, but with some differences regarded as specific; sometimes the two are merely of the same genus or not quite that, but of a single or very few species in each country—when the point which interests us is that this peculiar limited type should occur in two antipodal places and nowhere else.

It would be tedious and except to botanists abstruse to enumerate instances, but I would here mention two or three cases as specimens. Our *Rhus Toxicodendron* or Poison Ivy, is very exactly repeated in Japan, but is found in no other part of the world, although a species much like it abounds in California. Our other poisonous *Rhus* (*R. venenata*), commonly called Poison Dogwood, is in no way represented in Western America, but has so close an analogue in Japan that the two were taken for the same by Thunberg and Linnaeus, who called them *R. vernix*. Our northern Fox Grape, *Vitis Labrusca*, is wholly confined to the Atlantic States, except that it reappears in Japan and that region. The original *Wistaria* is a woody leguminous climber, with showy blossoms, native to the middle Atlantic states. The other species which we so much prize in cultivation, *W. sinensis*, is from China, as its name denotes, or perhaps only from Japan, where it is certainly indigenous. Our yellow wood (*Cladrastis*) inhabits a very limited district on the western slope of the Alleghanies. Its only and very near relative (*Maaekia*) is in Mandchuria. The *Hydrangeas* have some species in our Alleghany region. All the rest belong to the Chino-Japanese region and its continuation westward. The same may be said of Philadelphia, except that there are one or two mostly very similar in California and Oregon. Our blue Cohosh (*Canlophyllum*) is confined to the woods of the Atlantic States, but has lately been discovered in Japan. A peculiar relative of it—*Diphylleia*, confined to the higher Alleghanies, is also repeated in Japan, with a slight difference, so that it may barely be distinguished as another species. Another relative is our twin leaf—*Jeffersonia*, of the Alleghany region alone. A second species has lately turned up in Mandchuria. A relative of this is *Podophyllum*, our Mandrake, a common inhabitant of the Atlantic United States, but found nowhere else. There is one other species of it, and that is in the Himalayas. Here are four most peculiar genera of one family, each of a single species in the Atlantic United States, which are duplicated on the other side of the world, either in identical or almost identical species, or in an analogous species, while nothing else of the kind is known in any other part of the world. I ought not to omit Ginseng, the root so prized by the Chinese, which they obtained from their northern provinces and Mandchuria, and which is now known to inhabit Corea and Northern

Japan. The Jesuit Fathers identified the plant in Canada and the Atlantic States, brought over the Chinese name by which we know it, and established the trade in it which was for many years most profitable. The exportation of ginseng to China has probably not yet entirely ceased. Whether the Asiatic and the Atlantic American ginsengs are exactly of the same species or not is somewhat uncertain, but they are hardly if at all distinguishable.

There is a shrub—*Elliottia*—which is so rare and local that it is known only at two stations on the Savannah river in Georgia. It is of peculiar structure, and was without near relative until one was lately discovered in Japan (in Tripetaleia) so like it as hardly to be distinguishable except by having the parts of the blossom in threes instead of fours, a difference which is not uncommon in the same genus or even in the same species. Suppose *Elliottia* had happened to be collected only once, a good while ago, and all knowledge of the limited and obscure locality was lost; and meanwhile the Japanese form came to be known. Such a case would be parallel with an actual one. A specimen of a peculiar plant, *Shortia galacifolia*, was detected in the herbarium of the elder Michaux, who collected it (as his autograph ticket shows) somewhere in the high Alleghany mountains more than eighty years ago. No one has seen the living plant since, or knows where to find it, if haply it still flourishes in some secluded spot. At length it is found in Japan; and I had the satisfaction of making the identification. One other relative is also known in Japan; and another still unpublished has just been detected in Thibet. Whether the Japanese and the Alleghanian plants are exactly the same or not, it needs complete specimens of the two to settle. So far as we know they are just alike. And even if some difference were discernible between them, it would not appreciably alter the question as to how such a result came to pass. Each and every one of the analogous cases I have been detailing—and very many more could be mentioned—raises the same question, and would be satisfied with the same answer. These singular relations attracted my curiosity early in the course of my botanical studies, when comparatively few of them were known, and my serious attention in later years, when I had numerous and new Japanese plants to study in the collections made (by Messrs. Williams & Morrow) during Commodore Perry's visit in 1853, and especially by Mr. Charles Wright, in Commodore Rodgers' expedition in 1855. I then discussed this subject somewhat fully, and tabulated the facts within my reach. This was before Heer had developed the rich fossil botany of the arctic zone, before the immense antiquity of existing species of plants was recognised, and before the publication of Darwin's now famous volume on the "Origin of Species" had introduced and familiarized the scientific world with those now current ideas respecting the history and vicissitudes of species, with which I attempted to deal in a tentative and feeble way. My speculation was based upon the former glaciation of the northern temperate zone, and the inference of a warmer period preceding (and, perhaps, following). I considered that our own present vegetation, or its proximate ancestry, must have occupied the arctic and sub-arctic regions in pliocene times, and that it had been gradually pushed southward as the temperature lowered and the glaciation advanced even beyond its present habitation; that plants of the same stock and kindred, probably ranging round the arctic zone as the present arctic species do, made their forced migration southward upon widely different longitudes, and receded more or less as the climate grew warmer; that the general difference of climate which marks the eastern and the western sides of the continents—the one extreme, the other mean—was doubtless even then established, so that the same species and the same sorts of species would be likely to secure and retain foothold in the similar climates of Japan and the Atlantic United States, but not in intermediate regions of different distribution of heat and moisture; so that different species of the same genus, as in *Torreya*, or different genera of the same group, as *Redwood*, *Taxodium*, and *Glyptostrobus*, or different associations of forest trees, might establish themselves each in the region best suited to their particular requirements, while they would fail to do so in any other. These views implied that the sources of our actual vegetation, and the explanation of these peculiarities, were to be sought in and presupposed an ancestry in pliocene or still earlier times occupying the high northern regions. And it was thought that the occurrence of peculiarly North American genera in Europe in the tertiary period (such as *Taxodium*, *Carya*, *Liquidambar*, *Sassafras*, *Negundo*, &c.), might be best explained on the assumption of early interchange and diffusion through North Asia, rather than by that of the fabled Atlantis. The hypothesis supposed a gradual modification of species in different directions under altering conditions, at least to the extent of producing varieties, sub-species, and representative species, as they may be variously regarded; likewise the single and local origination of each type, which is now almost universally taken for granted.

HARDY TREES AND SHRUBS.

BY GEORGE GORDON, A.L.S.

THE ROSE ACACIA (*ROBINIA HISPIDA*).

THIS is a spreading, robust, deciduous shrub or small tree, which grows from 6 to 12 feet high, and has tortuous branches and hispid shoots, which, when leafless, are of a purplish-brown colour. It is a native of North America, where it grows on the high mountains of Virginia and Carolina, and was first introduced into England in 1758. It grows freely in any good garden soil, and is easily increased either by means of seeds or by grafting it on the common sort. As all the woody parts of the plant are remarkably brittle, it is best grown in a sheltered situation, as even a gust of wind in autumn, when the plant is covered with leaves, will often suddenly deprive it of branches of some years' growth. To prevent this the best plan is to pinch off the points of all the young shoots in June, and to place a few stakes here and there about the plant and fasten the branches to them. Topping the young shoots in June will also induce the production of a second crop of flowers in September. This Acacia is well suited for training against a wall or on trellis-work, and when so treated it produces a magnificent display when in flower.



The Rose Acacia.

The leaves are comparatively large, alternate and pinnate, with mostly five opposite pairs of leaflets and an odd or terminal one. The leaflets are obovate, deep green, smooth, and set on short footstalks. The flowers are large, pea-shaped, deep rose, scentless, and very showy; they are produced in loose, nodding, axillary racemes in June, and more or less until October; the calyx and peduncles are hispid. The legumes or pods are compressed, almost sessile, hispid, and many-seeded, with the valves thin and flat.

Nurses for Trees.—With good nursing almost any shrubs or trees may be made to grow anywhere. Without it there are hundreds of places where it is hopeless to attempt to grow rare coniferous or common trees, such as Oaks, for instance. Whatever does best in the neighbourhood—whether it be Larch, Spruce, Scotch Fir, Birch, or even Broom—that is the best plant to use for nursing and sheltering the trees or shrubs we wish to predominate ultimately. Plant choice trees in the positions and at the distances we wish them to occupy, but plant the nurses everywhere. Let them fill all the intervening spaces, almost embracing the permanent plants on all sides, without actually touching them. The function of these nurses is to help the other trees to grow, just as ours taught us to walk. But in arboreal matters the nurse is often allowed to grow over and smother the tree it was meant to help; and so there has been a rebound against the whole system of nursing, and we constantly see trees of rare form and surpassing beauty set down in the open teeth of the wind. Is it any wonder that, thus exposed, they refuse to grow, become stunted, or die? Good nursing is the secret of arboreal as of animal health; but when the tree or man is once vigorous enough to grow or walk alone, nurses must be dispensed with.—F.

THE KITCHEN GARDEN.

TRENCHING.

OUR soil is cold, stiff, and rather clayey, and our mode of trenching it is as follows:—The piece of ground to be operated on is liberally covered with half-rotted stable manure; an opening is taken out across the whole piece, 20 inches in width. A line is then set 20 inches from the opening, and a notch is made, throwing the soil inside. The manure and all vegetable matter are then skimmed off into the bottom. The soil cleared is turned on to the manure and roughly levelled; the spit taken out of the bottom is laid on the top, on its edge, and so on till the work is finished. A little practice enables the operator to put down every spit entire, and as straight as a line. The ground is measured from the first bottom spit to the nearest permanent mark, and the distance is jotted down in a note book, so that in the year following the bottom left this year is lifted the following year. The advantages of this mode of trenching are as follows:—We do not bring too much to the surface at once; still the ground is partly loosened and allows water (in such a season as this has been) to get away. The frost acts on it, and in spring it can be readily prepared for cropping at any time, for it is always dry. This mode of trenching takes a very little longer than plain digging, and it is as good a preventive of club in Cabbages as any kind of root application. CALADONICUS.

Earl Cathcart's Prize for the Best Essay on the Potato Disease.—The following are the regulations which have been published by the Royal Agricultural Society of England for the competition for Earl Cathcart's prize, for the best essay on the Potato disease and its prevention:—"All information contained in prize essays shall be founded on experience or observation, and not on simple reference to books or other writings. Drawings, specimens, or models, drawn or constructed to a stated scale, shall accompany writings requiring them. All competitors shall enclose their names and addresses in a cover, on which only their motto and the subject of their essay shall be written. The President or Chairman of the Council, for the time being, shall open the cover on which the motto designating the essay to which the prize has been awarded is written, and shall declare the name of the author. The Chairman of the *Journal* Committee shall alone be empowered to open the motto paper of such essays, not obtaining the prize, as he may think likely to be useful for the society's objects, with a view of consulting the writer confidentially as to his willingness to place such paper at the disposal of the *Journal* Committee. The copyright of all essays gaining prizes shall belong to the society, who shall accordingly have the power to publish the whole or any part of such essays; and other essays will be returned on the application of the writers; but the society do not make themselves responsible for their loss. The judges are not bound to award a prize unless they consider one of the essays deserving of it. In all reports of experiments the expenses shall be accurately detailed. The imperial weights and measures only are those by which calculations are to be made. No prize shall be given for an essay which has been already in print. Prizes may be taken in money or plate, at the option of the successful candidate. All essays must be addressed to the secretary, at the house of the society. Every essay must be written in the English language, or must be accompanied by an English translation, and must be sent in so as to arrive at the society's house, 12, Hanover Square, on or before May 1st, 1873."

NOTES AND QUESTIONS ON THE KITCHEN GARDEN.

Celery Protection.—Celery will have completed its growth generally by this time, and will soon require the last earthing up; but while there is a chance of growth, or so long as frost is not to be feared, this should be deferred as long as possible, for so long as Celery can be kept green and growing at the top so much longer will it keep; therefore don't be in a hurry to cover it up. Indeed, it should never be soiled higher than to within 6 inches of the top. The green top keeps up the vitality, and after the last earthing, if some long stable litter is drawn through between the tops of the plants, and allowed to hang over the sides of the ridge like thatch, it will throw off the rain to some extent, and exclude frost better than anything else.—J. S.

Forced Esculents.—Now is the time to be thinking about Seakale, Rhubarb, Mint, and forced salading of all kinds. Seakale forces well in a Mushroom house, or even in a cupboard by the kitchen fire. Rhubarb generally comes of a better quality out of doors, and should be covered with pots or boxes, and stable manure or leaves. Mint may be dug from the bed and placed either in pots or boxes in the Cucumber house or early Vinery. Lettuces should be taken up in northern districts, and planted neatly in a cold frame so as to be ready for use in severe weather; give air on fine days to dry up superfluous moisture. A plant or two of Tomatoes may be grown in pots and trained up the rafters in the Cucumber house, where they will continue to ripen their fruit through the winter.—F. W. B.

RECOLLECTIONS OF JOHN CLAUDIUS LOUDON.

BY NOEL HUMPHREYS.

(Continued from p. 490.)

So great had been the improvements effected at Wood Hall during the tenancy of the elder Loudon, that after his death it was re-let without difficulty at a still further advance of rent. Mr. Loudon had found it let for less than £200 a year, he had taken it at £700, and it was eventually re-let by his family for £1,000, all within two years. So that when his son published the well-known work in which he professed to point out the way to raise the rental of land, very greatly, and immediately, he was not speaking upon vague theory, but upon the authority of practical results. It is not difficult, therefore, to understand the readiness of General Stratton, after reading that, and the preceding work, to propose to the author very advantageous terms, in order to induce him to go to Oxfordshire, and undertake the management of his large estate at Tew, with a view to the improvement of its rental.

The homestead of that portion of the Tew Park estate which was leased to Loudon was called Tew Lodge, for the improvement of which he at once proposed a series of most important and extensive ameliorations, upon the principles of the latest Scottish improvements in agriculture and horticulture. The proposed works were commenced and carried forward with great spirit and rapidity during the whole of the year 1808, and were, in the main, completed in 1809. Such various works as were then carried on simultaneously—namely, the comparative rebuilding of the residence, the planning and erection of an admirably arranged stack of farm buildings, which were made to form a good architectural object, the making of new roads, the draining of the soil, the remodelling of the enclosures, the repair of fences, and making new ones, together with the devising of machinery, and every appendage of a farm upon a large scale—bear testimony to the constant activity of his mind, and his never-tiring industry. All this, too, was carried out according to plans and designs devised and drawn by himself. He had no models to follow; for at that time a large quantity of land was actually wasted in every English farm of considerable size, like that at Tew Park. And it was the prevention of this wasteful system that his improvements were devised to effect. The portion of the estate that he rented on a twenty-two years' lease was about 1,800 acres, all in a very rude state; and this half wild farm, with the residence, and the plantations around it, were converted, in an incredibly short space of time, into a *ferme ornée*, which, as he used to be fond of saying, long years afterwards, combined the *utile* and the *dulce*, on such an extensive scale as was not then to be matched in England.

He was never unduly boastful of the successful efforts he then made to improve the English methods of farming, and to add to the comfort and prosperity of the farmer and labourer, while increasing the rental of the landlord; but did not refrain from pointing out the vast difference that existed between the rentals obtained in Scotland and those prevailing in England, and was much gratified at the success of his undertaking, when he raised the rental of the farm at Tew from thirteen shillings per acre, at which rate he took it, to more than treble, namely, £2; while the mode of farming adopted insured a still greater benefit to the farmer than it did to the landlord. When he published a work descriptive of the Tew improvements, he quoted, with pardonable vanity, the following passage in a letter from Sir Joseph Banks to Sir John Sinclair: "Agriculture has derived, is deriving, and will derive more benefit from Scot's industry and skill than has been accumulated since the days when Adam first wielded a spade." When Loudon had completed his improvements, and got the culture of the land into full swing upon the improved system, he purposed letting a large portion of the land he had thus taken in hand, and thus realise a permanent income to the end of his lease; his intention being to take up his permanent residence at the Lodge, his severe rheumatic attack having disabled him to a certain extent from following the pursuit of a landscape gardener with anything like his former activity.

He tells us in his subsequent work, that on first looking carefully over the estate, he perceived at a glance a number of embryo resources for the realising "rich profits," and he there-

fore set to work, without delay, and with great spirit, classifying the different branches of his undertaking in the following manner:—

1. The purely agricultural department, improving and remodelling everything in that category.

2. The horticultural section, embracing not only all that tended to convenience and even luxury, but likewise to amusement and instruction.

3. The harmonious—comprising all such improvements as contribute to the elegance and picturesque beauty of the whole.

In the agricultural category he drained, equalised the size of the fields, and grubbed up the wasteful old hedges, turning to good account in the way of irrigation two streams that flowed through the property, and at the same time introducing a more suitable rotation of crops.

In the horticultural department he sought to realise an idea which his mind had fondly dwelt upon for many years—that of forming a "complete collection" of culinary vegetables, in groups, blending with each other, according to the "*Systema Naturæ*" of Linnaeus; or if found more harmonious and equally instructive, the natural system of Jussieu.

In the harmonious, he sought to adapt the general aspects of the land to agreeable and picturesque effects, according to his carefully considered designs, with the pleasant hope, as he afterwards tells us, of blending elegance with utility, in the full confidence that within two or three years' growth of the new plantations the place would become worthy of being very generally imitated, as closely as the difference of aspect, soil, and situation of other places would permit.

He considered with the greatest care the best systems of making farm roads, as regards their formation, their direction in relation to the wants of the farm, and every other necessary, or in any way useful particulars, even to the form and situation of the roadside ditches, which, he considered, ought, to prevent accidents, to have their hedge-sides next the road. He afterwards published diagrams illustrating the principles regarding farm roads, which he put into practice at Tew. The direction of the hedges in general he contrived in such a way as to make them useful as shelter from driving winds, from the east or north, as well as for separating field from field in a convenient and unwasteful manner; and in the suppression of the useless hedge system of the place he preserved all the well-grown trees, which, in their seemingly new positions, gave the whole farm a park-like and highly ornamental appearance, an effect which he had first found practicable at Wood Hall.

While re-arranging the general aspects of the plantations and making fresh ones upon an extensive scale, he entered into a regular crusade against the pollards; which he considered not only ignoble, but positively ugly objects in comparison with untopped trees. He also considered that they injured the fences much more than other trees, in consequence of their low tops being thicker and nearer to the ground, while the over-production of roots, induced in pollards by continual loppings, he thought, and with justice, must impoverish the surrounding soil to a very great extent; and finally he concluded that, unlike other trees, which when they are periodically felled, yield useful timber, more or less valuable, the pollard when rooted up is only fit for firewood. In consequence of these considerations, no mercy was shown to them at Tew, and they were exterminated, root and branch, along with many other old-world features of unsatisfactory appearance and doubtful utility which in Loudon's view both disfigured and injured the place.

His scientific planning of the new farm buildings displayed many new and valuable ideas; and in fact, shed a flood of light upon the subject, and have often been adopted by others without due acknowledgment.

He was exceedingly thoughtful for the comfort of farm labourers; and a leading principle in his well-digested plan for farm-buildings consisted in providing them with good and well-ventilated lodgings, in such situations as would be most handy to their daily work; supplementing these comforts with a regular allowance of milk and ordinary vegetables, and, if they would eat it, a daily portion of oatmeal. He was always fond of telling, whenever the Tew days were spoken of in

after years, how, by the example of some Scotchmen who had followed his father to Wood Hall, several young native labourers, after some little opposition, took kindly to oatmeal porridge; and also, following the advice of the frugal Scotchmen, how they deserted the public house, and kept the money in their pockets instead of wasting it on washy beer; while at the same time, and from similar example, they learnt to make more frequent use of milk and vegetables than was then usual with men of their class. If Loudon's principles in regard to plenteous fare and good lodging of the labourer had been carried out by the succeeding race of landlords and farmers, we should not have had to contend with the inconvenience and ruinous waste caused by a "strike" among the agricultural labourers in the year 1872, which is likely to lead to the gravest consequences, and an exodus of English

His constructive faculty was evidently one of the leading features of his active mind, and his evident bias in that direction led him at a later period to compile his "Encyclopædia of Architecture," and other works bearing upon that subject; and also to establish the "Architectural Magazine." The great extent of roofing required for the outbuildings of Tew led him to consider all the most economical methods of covering such buildings, and he eventually struck out the idea of "paper." It must be recollected that this was at a period long anterior to our recently-acquired knowledge respecting the ingenious uses to which paper is applied in Japan; and long before the time of shirt collars of paper, paper lace, or even papier maché tea trays. The proper kind of paper having been manufactured, after several experiments, it was applied after a system devised by Loudon, to the buildings at



View in a London Villa Garden. (See p. 523.)

muscle and energy to other parts of the world, where their rights will be more justly valued.

Although Mr. Loudon disapproved of sitting at the public house, he did not cease to consider a glass of good sound beer a good, and proper, and beneficial thing in proper time and place, and even established a brewery adjoining the great stack of farm-buildings, in order that there might be a supply of that wholesome beverage on the premises. He likewise built a killing-house in a suitable situation; a pond for washing horses after work, which had a paved bottom set in cement; and this, as well as other places where a supply, fresh and clean, was required, was fed by a perpetual spring which he discovered near the house; from which source large reservoirs of water, in case of fire, were kept continually full.

Tew, and it was considered, at the time, that elegance and durability, as well as economy, had been achieved; as we are still, however, using the far more expensive materials—lead, zinc, and slate—it may be inferred that paper was not found, eventually, to answer so well as was expected; but I have never heard the sequel to the story of the paper roofs at Tew.

The plan of the new farmstead, which was converted into a comfortable and handsome villa residence, was a model of excellent arrangement, exhibiting many new ideas concerning the most convenient position of the various apartments and offices in relation to each other.

A large orchard was planted, and, carrying out his strong predilection for classification, a botanic garden was also added; while even in the plantation of the pleasure ground he adopted

a system, by which trees of certain classes were kept together, as in the plan attempted by Darwin at Lichfield. By such a system of grouping, he considered that new acquisitions could be conveniently added in their proper places. But by this extreme love of order many picturesque effects of contrast, by bringing trees of distinct classes into close juxtaposition, were sacrificed to the exigencies of classification; and it might, indeed, be urged against such a system of planting that it was unnatural, and unlike the distribution of trees in their wild state. Attached to the orchard and garden were pieces of ground devoted to seed-growing, and a nursery for young trees and shrubs, and also a large plantation of Currant bushes, as he had heard that in the neighbourhood of Worcester great profits were realised by Currant growing for the British wine manufacturers.

(To be continued.)

THE LIBRARY.

THE HISTORY AND CULTURE OF ORANGE TREES.*

THIS magnificent volume is a new and thoroughly revised edition of "L'histoire naturelle des Orangers," by A. Risso, of Nice, and A. Poiteau of Versailles—a work which combined both the Italian and the French views of the subject. The original work appeared in 1818, and was among the most splendid of those superbly illustrated works which illustrated the annals of the French press during the first quarter of the present century; among these may be cited the two great works of Redouté, the celebrated flower painter, the well-known folios on all the then cultivated varieties of garden Roses, and his second great work, which included all the species then known of the Lily tribe. So much has been subsequently achieved in both these sections of floriculture, that M. Redouté's splendid works, perfect as they are in the beauty of their artistic and costly execution, have become utterly useless as instructive books of reference. Not so with Messrs. Risso and Poiteau's work on the numerous and striking varieties of the Orange family, which they separate into eight divisions—Sweet Oranges, Bitter Oranges, Bergamots, Limes, Shaddockes, Lemons, and Citrons; to which original sections, few, if any, distinct kinds have been added, since the beautiful work, of which the noble new edition lies before us, was first produced. M. Du Breuil has, however, added five new plates to the 105 of the original work, and two very valuable chapters on culture, which may induce English fruit-growers to pay more attention to that noble and most beautiful class of fruit trees comprised in the genus Citrus, which has hitherto been unaccountably neglected in this country. We have surpassed the world in our culture of the Grape, the Pine, and the Peach; but the Orange and its congeners, the grandest of fruits, have not as yet seriously engaged the attention of our great cultivators. The appearance of the work under notice, which should be in every horticultural library, may perhaps serve as a stimulus to more exertion in the direction suggested, which might become, in England, if taken up with energy, a new and important branch of produce in table fruit, and might possibly lead, through the medium of successful hybridisation, to the production of permanent improvements in this truly royal fruit, by the development of thinner rind, more copious and more delicately textured pulp, and more abundant and finely-flavoured juice; thus lifting the Orange into a foremost position as a high class table fruit, and rendering its culture extremely lucrative. Our modern orchard-houses are admirably suited to the culture of the Orange tribe in all its varieties, and with the additional advantages of English capital, the growth of Oranges and Citrons for commercial purposes, for flowers, as well as fruit, might surely be made to produce as good or better results than those arrived at by the comparatively rude method of culture which satisfies the growers of the south of France and Italy; who, feeling the great advantages resulting from a beautiful climate, and being contented with the extremely profitable results of

their present mode of culture, have not hitherto sought improvement; though the valuable advice thrown out by M. Du Breuil may be the means of opening their eyes to the possibility of still more profitable results, as the natural consequences of higher and better methods of culture.

"The Orange tree," as M. Du Breuil remarks in his opening paragraph, "gratifying at once, as it does, the sight, the smell, and the taste, was certain to attract the attention of man at a very early period;" and, as he says, "we therefore find among the prehistoric legends of Greece one which assigns its introduction to Hercules, who seems to have been as much a hero among husbandmen and their useful works as a victor in battles. For instance, we find among his celebrated twelve labours, the destruction of wild animals dangerous to cattle; the chasing away of the destructive Stymphalian birds; the bringing of the celebrated Cretan bull into Greece; and also the mares of Diomedes; and then comes his expedition in search of the celebrated golden Apples of the Hesperides, who were the daughters of Atlas, and in whose gardens the golden Apples grew. The rich slopes and valleys of Mount Atlas are still favoured by a climate highly favourable to the growth of the Orange and Citron, and, therefore, although clothed in a cloud of fable, the legend very probably refers to the actual adventures of some bold botanical explorer of prehistoric times, who visited the then far western regions of the Atlas, and took back to Greece the beautiful trees which bore such remarkable fruit as might well be termed "Golden Apples." French writers always like to begin at the very beginning, especially if classical; and when such an introduction is invested with as much interest as is Messrs. Risso and Poiteau's account of the earliest Greek horticulturist and his golden apples, we are bound to let them have their way, though it may not be exactly ours. Yet we may be excused for passing over all that follows in reference to the ancient history of the Orange tree in Media, Assyria, Persia, Greece, and Rome; and its gradual spread, by the Arabian conquests and other causes, over the whole of southern Europe. It may, nevertheless, be interesting to state, *en passant*, that the sweet China Orange was introduced to Europe by the Portuguese, a fact which seems pretty well established by the names, *Portogalie* and *Portogalli*, by which it is respectively known in Nice and in Italy, where Orange growing has gradually developed itself into a vast and lucrative trade.

The "Sweet Orange," that is to say most of its best varieties, came originally from China. This tree, with its lovely evergreen foliage, its snowy, fragrant blossoms, and beautiful fruit, is, as Italian writers truly say, the king of fruit trees. It lives to a very great age, though it is still too new in Europe to enable us to judge of the full extent of its duration in a vigorous state; but it is interesting to know that, according to M. Poiteau, there is a tree at Versailles which was sown in 1421, and which appears likely to endure for many more centuries, although now more than 450 years old. At Rome there is, in the courtyard of the Convent of St. Sabina, an Orange tree said to have been planted by St. Dominic in the year 1200, which had attained to the height of 30 feet in the time of its comparative youth, and is now no larger, so that the full growth of an Orange tree of that kind may be estimated at about that height; though at Nice there was a celebrated tree, probably of a more robust species, over 50 feet high, which, after resisting the severe frosts of 1709 and 1763 without injury, was destroyed by that of 1778, being probably at that period already weakened by age. The trunk of that remarkable tree could scarcely be embraced by two men, and its branches made a shade beneath which a table could be spread for forty people.

In introducing the nomenclature of the modern system of divisions, M. Du Breuil is very severe upon "closet botanists, who decide out of the depths of their library that such and such a plant is a mere variety," and consequently beneath their notice; but it is impossible in this place to enter into these views; suffice it to say, whether the divisions and nomenclature adopted be or be not in advance of the "closet botanists," it is exceedingly convenient and instructive, and perfectly answers the purposes aimed at in the beautiful work which he has edited with so much persevering labour and skill. We have only space to glance very slightly at the species and varieties treated of in the eight divisions adopted, the whole

* "The History and Culture of Orange Trees." By A. Risso and A. Poiteau. A new edition, edited by M. A. Du Breuil: Paris, 1872.

of which are still included by M. Du Breuil in the genus *CITRUS*.

Of the Sweet Orange twenty-eight distinct kinds are described, and, in most instances, these descriptions are each illustrated by an exquisitely engraved and carefully-coloured engraving. The common Sweet Orange, the *Oranger franc* of the French (*Citrus aurantium vulgare*), is, we are told, a strong-growing plant, probably the original type of many of the African and European kinds. It is furnished with abundant spines, which is often a characteristic of plants whose habit has not been modified by culture. The tree and its fruit are remarkably handsome; but as the fruit ripens late and is often wounded by the thorns, in high winds, so as to prevent it from keeping, it is not largely cultivated. Its full grown height, on the shores of the Mediterranean, is about 25 feet; but it is thought it would attain twice that height in a warmer climate. The China Orange, on the other hand, though by no means so grand a tree, ripens its fruit early, and has no thorns to injure it. It is, therefore, far more extensively grown for commercial purposes.

The Genoese Orange, *Citrus aurantium genovense*, is much grown, and most of the ordinary Orange plants received in this country are raised in the Ligurian province, where the grafting of stocks for sale has become a great trade. The fruit is one of the favourite kinds in commerce. The *Citrus aurantium nicense* is the sort most grown at Nice for exportation; its abundant crops, both of fruit and flowers, being a source of great wealth to the Orange-growers of that district. As dwarf, ornamental plants, suitable for small greenhouses, and table decoration, there are several kinds of the Sweet Orange class, such as *C. a. minutissimum* and several others. This class also includes the red-pulped Maltese Orange, and other similar kinds, with several other distinct species or varieties, the fruit of which is of various forms—Pear-shaped, horned, that is consisting of three or four pointed divisions, like a group of horns, Melon-shaped, Lemon-shaped, and fruits of several other kinds of singular formation. There are also the sweet Oranges of the Pacific islands, and other localities, varying in form, growth, and general character in an extraordinary degree. The *Citrus aurantium nobile*, a magnificent tree, with very large fruit, a native of Cochin China and some parts of China proper, has not yet been introduced; twenty-eight more or less distinct kinds of "sweet" are enumerated and described, and nearly all of them figured. Entering upon the description of that section of the Orange family which the authors of this work denominate *Citrus bigaradia*, and which contains all the bitter Oranges, M. Du Breuil has another fling at the "book botanists," including even Linnæus himself:—"Since the system of botany introduced by Linnæus," he says, "botanists have entirely neglected the knowledge of our fruit trees, and have confounded, under the name *Citrus aurantium*, the sweet Oranges with the bitter, which Tournefort had so justly distinguished." Among the *Bigaradias*, the *Bigaradier Franc* is first noticed by our authors. In *Citrus B. corniculata*, of which there is an exquisite figure, we have a singularly formed fruit, with horn-like excrescences. This is the plant from which the eau de bigarade is distilled, which is used for flavouring the Dutch curaçoa. The history of the origin of the curious *C. Bigardia bizzarra* is given at great length. This singular plant bears Melon-formed fruit, the sections of which are alternately strongly tuberculated, like the Citron, and smooth like the true Orange, every individual fruit varying in the most capricious manner. To the *Bigarardia* category belongs the well-known Seville Orange of commerce. Twenty-four species of *Bigarardia* are enumerated and accurately described, and most of them figured.

We have already extended this notice so far beyond the limits of a review, that our space compels us to abandon even a cursory analysis of the remaining sections of the work. Suffice it to say that in these divisions the Limes (eight kinds), the Bergamots (five kinds) the Shaddocks (six kinds), the Lumias (twelve kinds), the Lemons (forty-six kinds), and the Citrons (seventeen kinds), are fully described, and that each description is full of important, readable, and instructive information. The remarks on the medicinal qualities of the Orange tribes, and on the commercial value of the perfumes and conserves obtained from the flowers, and of the delicious

candies and preserves made from the fruits, are all extremely interesting; in short, the work is an exhaustive text book on all that concerns the numerous kinds of Orange trees, and their culture in Europe; and it also contains useful references to all authors of any note who have written on these subjects.

H. N. H.

GARDEN DESTROYERS.

ANTHONOMUS POMORUM.

THE small beetle which is here figured (twice the size of life) is a weevil which sometimes does much harm to the fruit crop. It is obscure mauve or rusty grey in colour, and is marked on the back behind the middle with a paler chevron-shaped patch, pointing backwards, and margined with a darker space on each side. It passes the autumn and winter in a torpid state, but revives and couples about the end of April or beginning of May, when the Apple blossom is about to appear. The female may then be seen travelling about among the buds, as if in search of a suitable one; but it is not so much a well-filled, promising bud that she seeks, as flower-buds instead of leaf buds; she knows the difference between them as well as e'er a horticulturist of us all. When she has found the flower-bud she gnaws a small hole in and through the envelopes into its heart, and eats around, so as to form a small chamber in the middle,



Anthonomus Pomorum.

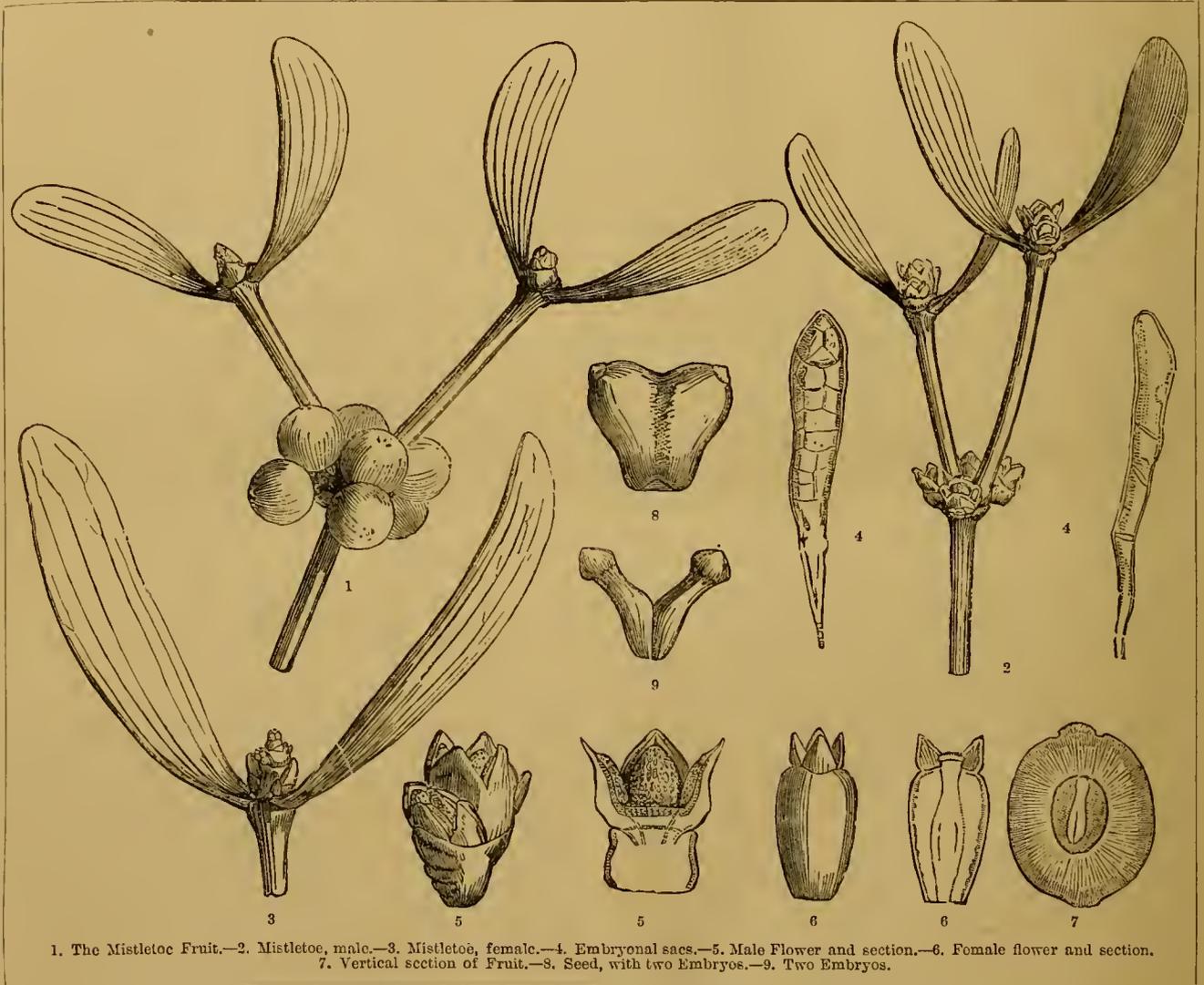
a process for which her long, thin snout is specially adapted, and then she deposits an egg in the heart of the prepared chamber, pushing it in with her snout. She goes on thus from one flower-bud to another, never laying more than one egg in the same bud. At the end of a few days each egg hatches out a small, apparently helpless, yellowish grub, with a black head; helpless it looks, for it has neither eyes nor feet; but it does not need them, for it has neither to look for its food nor to travel in search of it; its work and its food is all around it. It has only to devour what is placed before it; it speedily eats up the stamens, the pistil, and the ovary of the flower. Notwithstanding this, the blossom goes on swelling and expanding, until the injury done by the grub suddenly arrests its progress. The petals, still partially closed, form a sort of cap, but presently wither, and finally assume a scorched appearance. The larva meantime grows rapidly, and in a fortnight after it is hatched it is transformed into a nymph, in the very cradle in which it was born. If we look at the bud a little later we may see a small round hole on the side of the cap, which is an indication that the beetle has been there, but has now gone out; the small hole is the door of exit. In laying its eggs the weevil requires the buds to be closed. In the open state it does not suit it. Consequently weather favourable to the rapid development and opening of the flower-buds is unfavourable to the insect. It may take the weevil three weeks to lay all her eggs, but if the buds are out in a week she is cheated of two-thirds of the time she reckoned on. If the weather is backward, then the flowers are slow in coming out and the insect has the

more time to complete her work. In accordance with this it has been observed that the subsequent numbers of the insect produced are many or few, according to the slowness or rapidity of the opening of the flower-buds, in other words, the kind of spring weather.

There is no way hitherto discovered of preventing the attacks of this insect otherwise than on the smallest scale. When one has a single cherished tree the buds may be watched and the insect caught by hand. It is so intent on its object when laying its eggs that it is easily taken. A more wholesale way is to beat the branches into an inverted umbrella or over a sheet spread around the tree. The insect is one of

THE MISTLETOE.

COVENT GARDEN and most other markets being now full of this popular plant, this is perhaps the most appropriate season for presenting our readers with some illustrations showing its structure; legendary and other lore about it abounds everywhere, but the details of its structure are not so well understood. The flowers are greenish, usually three together, in short clusters set in the forks of the branches and axils of the leaves, and, as will be seen from our illustrations, they are, in botanical language, unisexual, that is, the stamens and pistils are in different flowers. The female plant is more luxuriant in its growth than the male. The plant is most



1. The Mistletoe Fruit.—2. Mistletoe, male.—3. Mistletoe, female.—4. Embryonal sacs.—5. Male Flower and section.—6. Female flower and section.
7. Vertical section of Fruit.—8. Seed, with two Embryos.—9. Two Embryos.

those that sham death on the slightest alarm and topples off the branch at a touch. Advantage can be taken of this to make it fall into the umbrella or sheet, when it can be taken and destroyed, and frequent repetitions of this process may be of some service by diminishing their number.

As the perfect insect passes the winter in a state of torpidity a useful precaution is to remove as much as possible from the trees and the surrounding ground all suitable places for hibernation, such as ragged bark, stones, &c.

There are several parasites that assist in keeping down their number, the most important of which are *Pimpla pomorum*, *Encyrtus flavo-maculatus*, *Compoplex latus*, and *Microgaster impurus*.

A. M.

commonly found on the Apple, Poplar, Hawthorn, Lime, and Maple; and also on various other trees, including the Oak and Chestnut, though it is rare on these. In districts in which the Mistletoe is scarce, it is often the aim of the gardener to establish it on some tree in the pleasure ground, and this may be successfully done by procuring good seeds in early spring and inserting them in small slits in the bark, or even by merely smearing them on by the aid of their own glutinous pulp. The best accounts to be found of the Mistletoe are those given by Dr. Harley, in the "Transactions of the Linnean Society" (vol. 24, p. 175), and by Dr. Bull, in the *Journal of Botany*, 1864, p. 361; the same author has also an interesting paper on the subject in the "Transactions of the Woolhope Club,"

No. 5, p. 59. The common Mistletoe may be found spread over the whole of temperate Europe, from Sweden to the Mediterranean, and far into Asia. In England it is common in the southern, and especially in the western counties; but in the north it is scarce, and both in Scotland and Ireland it is unknown.

GARDEN STRUCTURES.

BOILERS AND THEIR MANAGEMENT.

THE chief drawback connected with almost all recently-invented boilers is complication instead of simplicity, novelty of arrangement instead of facility of action; for it may be fearlessly asserted that a properly set saddle-boiler will take a good deal to beat it. Price for price, wear for wear, whether wrought or cast, it is little liable to get out of order. The strength of a boiler, and to a large extent its real use, are in an inverse ratio to the number of joints which it contains; and a properly-proportioned cast-iron saddle-boiler, with the connections cast on it, is, perhaps, the most durable and, consequently, the cheapest boiler that can be made. Then follow the modifications of the saddle with back-water way, additional flues, &c.; but as most of these improved forms, as they are called, lose the use of the outside surfaces for heating purposes, it is questionable whether the supposed gain is not more imaginary than real. The tubular saddles are, in many respects, good, especially when properly encased in masonry; but all iron-cased boilers, from Spiller's down to the present time, are wasteful of fuel, just because the loss in the stoke-hole and up the chimney is what Dominie Sampson would call "prodigious." Sympathy with vertical boilers, whether plain or tubular, I have none, for, wrong in principle, they can never be effective in practice without a very large waste of force up the chimney. Some of them are powerful; but tested by the heat of the chimney 6 feet above the boiler, they are all wasteful, and that is "a pull-back" which, at the present price of fuel, few would like to put up with. Whatever the boiler of the future is to be, I know not; but the economical boiler of the past and present has been, and is, of horizontal form.

But had boilers are more frequently the result of bad setting and bad management than of any positive defect in the boilers themselves. Not one bricklayer in fifty can set a boiler as it ought to be set, and the more intricate the construction the more likely are they to err. The same may be said of those upon whom the charge of boiler fires devolves, for, ignorant of the combustion of fuel and the economical generation of heat, they frequently waste more heat up the chimney than they send through the hot-water pipes. If you see a stoke-hole littered and full of ashes, the ash-pit fire doors partly open to regulate the draught, whether managed by master or man, you may make certain that fuel is being wasted. It is not the quantity of fuel consumed but the manner of consuming it in which true economy in heating consists; and the man who is supplied with proper fuel and then carries anything but clinkers away from the stoke-hole is, be assured, ignorant of his business. Proper fire-place fittings have also much to do with economy in fuel. Silvester's fittings are unquestionably the best, and though somewhat expensive, when properly managed the saving in fuel will quickly refund the extra cost. I am a great advocate for a cast-iron cinder-pan filled with water at the bottom of the ash-pit, as, in that case, a shovelful of wet ashes may be had at any time, and that, mixed with small coal, is the best thing to check the fire, either by night or day. A properly-managed fire requires no damper in the chimney. Combustion depends upon draught—fresh air, and that can only be regulated from the fire-place and ash-pit.

The consumption of smoke is a matter which lies in a nut-shell. Your oil, naphtha, or benzoline lamps, when you light them, make a great smoke; put on the chimney, and the smoke ceases. Why? Because the life of combustion—oxygen—is supplied at the right point, that is, where the fire originates; hence air should be supplied not by opening the doors sideways but by raising them, so that air, in the necessary quantity, may flow in at the right point. But there can be no consumption of smoke until the fire is thoroughly lighted; then push it forward, and add all fresh fuel on the dead plate next the door, so that it may be "coked" before it is consumed, and if you have smoke for more than a few seconds after firing up it will either be because the fire is low or the fuel has been thrown too far forward. Attend to these rules, and heat may be increased with a saving of fuel.

PRACTICAL.

Joining Hot-water Pipes.—We join our hot-water pipes here with vulcanised india-rubber rings. They are simply drawn on the end of the pipe that is to be inserted in the socket or collar, and they may require a few rolls over, so as to bring them flush with the end of the pipe; then by pushing the latter into the socket or collar, the joint is made, and made thus lasts for years, in fact for an indefinite period.—H. S.

GARDENING ROUND LONDON.

(DURING THE PRESENT WEEK.)

BY OUR SPECIAL REPORTER.

PRIVATE GARDENS.

Flower Garden.—Were it not for Christmas Roses—pale rose-coloured, and white—our outdoor gardens would now be all but flowerless. *Jasminum nudiflorum* on walls, and stray blooms of Pansies and of a few other plants, also help to maintain as much gaiety as can well be expected at this dull time of year. Berry-bearing shrubs and variegated-leaved plants, such as *Aucubas*, likewise serve to light up and relieve the sombre appearance of heavy clumps of ordinary evergreens. *Yuccas*, always interesting, are just now in their least attractive state, being tied up quite closely together, in order to prevent the crowns from being destroyed by frost. Even more unsightly is the plan of fixing a board above each plant to throw off wet; but it has, nevertheless, the effect of often saving the plants during an unfavourable winter. *Fuchsias*, *Pæonias*, *Clematises*, the more tender kinds of *Roses*, *Myrtles*, *Magnolias*, and many other plants are being protected by a mulching of leaves or litter, and also by means of a thin covering applied to the tops of such as are most easily injured.

Conservatories.—*Selagias* are being potted in a mixture of loam and leaf-mould, to which is added a goodly portion of silver sand; after being potted they are kept in the warmer corners of the conservatory for a time. Dutch bulbs are now finely in flower in some places, and successional batches of them are being pushed on to take their place when their beauty is over. Roman *Hyacinths* have been in charming condition for these last six weeks. Potsfuls of early *Violets* ornament the front stages; others, to come in in succession, are kept in cold frames, and are subjected as required to an increased temperature, in order to force them into flower. *Chrysanthemums*, with the exception of some of the Japanese kinds, are over for a season. Suckers of large-flowered sorts are taken off for next year's stock. *Camellias* in borders are beginning to open their flowers, but most dependence must for some time yet be placed on kinds that are forced. Forced *Azaleas* are likewise beautifully in flower, and their gaiety is maintained by means of successions from the forcing houses. *Lapagerias*, especially the red one, decorate the roofs; the white sort, though considered difficult to manage, grows and flowers as freely as the red one under similar conditions. Early-forced plants of *Hoteia japonica* are coming into bloom, as are also *Lilacs*, *Deutzias*, Indian *Rhododendrons*, *Jasminums*, *Forsythias*, *Spiræa prunifolia*, *Lily of the Valley*, and *Cinerarias*. Amongst other plants coming into bloom at this season are *Salvias*, red, white, and blue; *Cyclamens*, Chinese *Primulas*, *Schizostylis coccinea*, *Libonias*, *Mignonette*, *Roses*, *Tree Carnations*, *Correas*, *Chorozemas*, *Croweas*, *Coronillas*, *Epacrises*, some *Acacias*, *Sericographis*, zonal *Pelargoniums*, *Monochætum*, *Daphnes*, *Tremandras*, *Spermamia africana*, *Loicera sempervirens*, some kinds of *Mesembryanthemums*, and the beautiful though hardy aquatic *Aponogeton distachyon*.

Stoves.—In these we have now in bloom *Ipomæa Horsfalliæ*, *Passiflora kermesina*, *Thunbergia Harrisii*, *Euphorbia Bojeri*, splendens, and *jacquinæflora*; *Manettia bicolor*, different kinds of *Gesneras*, *Eranthemums*, *Justicias*, *Begonias*, *Tillandsias*, *Thyracanthus rutilans*, *Poinsettias*, *Epiphyllums*, *Uroskinnera spectabilis*, *Rondeletias*, *Siphocampyluses*, *Aspidistra lurida*, whose flowers just appear on the surface of the soil, *Bonvardias*, *Centrapogons*, *Aphelandras*, *Urceolinas*, *Hippeastrums*, and others. In addition to these are many sorts of *Orchids* that do well in ordinary stoves, if their flowers are kept free from drip or wet. Young *Clerodendrons* are placed underneath the stages and are kept pretty dry. *Lagerstrœmias*, *Erythrinæ*, *Bougainvilleas*, and similar plants are now kept rather dry at the root, but they are not cut over until quite ripe. A sprinkling of tepid water is given them overhead with the syringe on fine days; air is sparingly admitted.

Indoor Fruit and Vegetable Department.—For the general stock of *Pine-apples* a root temperature of from 70° to 75° is maintained, but 10° more are given to those starting for early fruit. If the heat is found to be declining the linings are renewed and additional coverings are placed over the sashes at night. Vines as soon as pruned are unfastened, and the rods are bent down to near the ground, a practice which causes them to break more evenly. As soon as such as have been subjected to this process break their buds, the shoots are tied up again into their permanent positions. Air is sparingly admitted until they have fairly started into growth, but as soon as such is the case air is given at mid-day on every favourable opportunity. A few *Figs* in pots are started in the stove or in a vinery that is being forced. A temperature of 50° is maintained in the early *Peach-house*. *Cherries* are subjected to the same temperature, or perhaps one a few degrees lower; but they have

the assistance of a slight bottom heat. Strawberry plants in pots are placed in frames or are stacked on their sides in a ridge of ashes. Some are placed on top shelves near the glass in vineries and Peach-houses. Asparagus, Seakale, and Rhubarb roots are being forced and replaced by others as may be necessary. Kidney Beans are being forced in pots according to the demand. They are kept near the glass, and frequently syringed to keep down red spider. Successional sowings of Mustard, Cress, Chervil, and Sweet Basil are being made. Endive is blanched as required. Chicory and Dandelion roots are also placed in the Mushroom house to grow and blanch. Roots of Mint and Sorrel are potted in sufficient quantities so keep up the supply. Air in favourable weather, and protection in the event of frost, are given to frames containing Lettuces, Onions, Carrots, Radishes, and young Cauliflower plants.

Hardy Fruit and Vegetable Department.—The unusually wet weather which we have had has stopped all outdoor operations, for working the soil whilst in a saturated condition is productive of much mischief. Orchard trees are being pruned and thinned, as are also fruit bushes. Trees for walls are likewise being pruned and nailed. Supports, in the form of strong stakes, are applied to Raspberry plantations. Snickers from fruit trees are lifted, their roots and tops shortened, and the plants transplanted in lines 18 inches apart, to act as stocks for grafting on in fifteen months' time. In wet weather stakes for different purposes are being made, labels painted, and nets for protecting fruit bushes in summer, and tiffany for protecting fruit tree blooms in spring, are being mended. Soil is being got under cover for early Cucumbers and Melons, and for French Beans, Pines, &c., so that it may dry a little before being used. A cool, airy shed is the best place for soils. Leaf-mould heaps are being turned, and all roots of adjacent trees that may have found their way into them, are cut off and removed, also twigs of trees, as they are productive of fungi. In turning such heaps, dry portions are thoroughly shaken out, and mixed with the damp leaves, for unless all are equally damp they do not decay properly, and the mould made by them is not so good as it should be. As regards vegetables, the soil on the top of Cardoon ridges is made firm about the necks of the plants, in order to prevent the ingress of wet; a few Cardoons are also taken into the Mushroom house to blanch. A little earth is being drawn to such Peas and Beans as have appeared above ground. They are protected from slugs by scattering coal-ashes or lime thinly over. Hoops are put over Parsley-beds, in order that they may be covered with mats in the event of frost. To Cauliflowers, Lettuces, Carrots, and Onions in frames, air is given freely, the sashes are wholly removed on dry days, but are replaced during rainy weather; and at night, if there is any likelihood of frost, some litter is shaken over the sashes and removed in the morning.

NURSERIES.

Indoor Department.—Pots containing Mignonette are kept in frames as near the light as possible, and air is given to them on every favourable opportunity. Some of the Mignonette plants are just appearing, others are an inch or two in height, and some are coming into flower. In shifting them from the seed-pots into larger ones, the plants are never separated and potted singly; they are only thinned out to six or eight to each pot. Plants of tree Mignonette are kept in light greenhouses, trained to one stem, and only allowed to branch off when some inches above the ground. Deciduous climbers in pots are kept rather dry; such as are evergreen are also kept a little on the dry side, and are stored away behind other plants. Curcumas, Gloriosas, herbaceous Begonias, Clerodendrons, Crinum, Gladioli in pots, &c., are placed under the stages of stoves or intermediate houses, and are kept quite dry. Roots of Caladiums, Achimenes, Gloxinias, &c., are turned out of the pots in which they grew, and are stored in pots of dry silver sand. A few sheets of newspaper are then placed over the pots to keep out damp. Hippeastrums are kept under the stages of intermediate houses, and, as they begin to show flower, they are placed near the light on front stages; if, however, they are wanted in bloom early, some promising plants of them are selected and placed in a brisk stove temperature until expanded. Hyacinths, Crocuses, Tulips, and Narcissi in pots and boxes are placed under stages in cool houses, and are covered over with Cocoa-nut fibre until they shoot up a few inches, when they are placed on stages near the light. Both hardy and greenhouse Ferns and the hardier Club Mosses are placed under the stages in cool houses and also amongst Camellias that are planted out. Pots containing roots of Belladonna Lilies are also stored in greenhouses, and are kept moderately dry. Imported plants of Zamias are potted and kept moderately moist in a stove temperature. Cycads, however, as a rule, are kept rather dry. Such Orchids as require it are being taken off the blocks on which they have been growing, and are refastened on pieces of cork, which retains moisture, and is, therefore, better than the ordinary deal boards commonly used. Daphnes of various kinds lately grafted

on Mezereon stocks are removed from close frames to side shelves, that is, if the grafts have fairly taken. Cuttings of Hibiscuses, Ixoras, Stephanotis, Azaleas, Gardenias, &c., if rooted, are set on side shelves in shady positions, but are not potted singly until spring. Additional supplies of cuttings of different things are being put in. Those whose leaves are very long have them tied to neat stakes. Berries of Ardisias are being collected and spread out to dry. Solanums past their best are placed under stages, and their finest berries are saved for seed. Cuttings of the variegated Aucubas are inserted thickly in beds of cocoa-nut fibre, in which there is a little bottom heat, and in which stove plants are plunged, the Aucubas being in the intervals between the pots. Cuttings of Lobelias, Petunias, Fuchsias, Pentstemons, Salvias, and Heliotropes are inserted in an intermediate temperature; but the propagation of soft-wooded plants is not assiduously pushed forward yet, as a continuance of cold, dull weather, whilst the days are so short, would prove detrimental to them, and possibly cause them to damp off.

Outdoor Department.—Outdoor tanks are carefully surrounded with straw and mats, so as to obviate injury from frost. Frames without sashes are hooped over so as to support mats. Under the mats are stored Chrysanthemums, herbaceous and alpine plants in pots, Rhododendrons, choice young Conifers, Roses in pots, &c. The hardier kinds of herbaceous plants in pots are arranged in beds from 4 to 6 feet wide in the open air, and in some cases they are plunged in cocoa-nut fibre or in coal ashes. Many bulbous and tuberous-rooted plants that were in the damp ground have been lifted and stored thickly in frames amongst moderately dry soil; some of those likely to grow are planted about 6 inches apart under similar conditions. Amongst plants thus treated are Crinum capense and maritimum, Zephyranthes, Watsonias, Antholyzas, Ornithogalums, Lilium, Platycodons, Oxalises, and others. American Cowslips are lifted, divided, and again replanted. Beds that contained summer bedding plants have been dug over and are filled with unsold Dutch bulb roots.

MARKET GARDENS.

Operations are still suspended, on account of the wet, and only such workpeople are retained as are absolutely necessary for the preparation of vegetables, &c., for market. These consist chiefly of Coleworts from open quarters, and also, in some instances, from the Asparagus ground; Brussels Sprouts, which have been exceptionally fine this season; Savoys, red Cabbage, Endive, Cauliflower, and a few early heads of sprouting Broccoli. Produce now being sent to market also consists of Celery (the only fault belonging to which is that the outer leaves have burst rather badly), and root crops. During such dry opportunities as sometimes occur, digging is being done and manure carted out. Onions from the early autumn sowings are being transplanted with dibbers 6 inches apart in lines, between fruit bushes and rows of one or two-year-old Asparagus. Spaces occupied by autumn-sown Cabbages are also filled with Onions. Some rows of Sweet Peas, for producing early flowers, are about 2 inches high, whilst another sowing is appearing above ground, and a third has just been made. As Seakale crowns are being cut, the roots are removed and are replaced by others. From Asparagus in frames few heads have yet been cut; the greater part of that in our markets comes from south Europe, and realises about thirty shillings per bundle. Rhubarb is coming in freely. Mushroom beds have suffered a good deal from wet, but, nevertheless, they are bearing fair crops. The litter with which they are covered is being occasionally shaken up and partly replaced by fresh material, which is, moreover, covered with mats.

Good out of Evil.—The New Zealand correspondent of the *Times* writes:—"It may be interesting to English and, still more, to patriotic Scotch readers, to learn that the Scotch Thistle plays a very important part in this colony in assisting the spread of the English Grass. It has, indeed, proved itself a most valuable agent in preparing the rough Fern hills for the reception of Grass seed. The Thistle has its fling for three or four years, taking full possession of the ground, but, though inconvenient, it is by no means without its uses during that time, for sheep, cattle, and horses greedily devour the seed heads when in blossom, and often eat the leaves of the plant as well, and many runs when under Thistles have carried more stock than before the weed appeared. After the Thistle has exhausted the land of its particular requirements, and has died out, which it does in about four years, it is invariably found that stray plants of English Grass and Clover have been nursed into strength by their prickly neighbours, and that the long, full taproots of the Thistle have opened and pulverised the surface soil and prepared a seed-bed in which the English Grass takes root and flourishes far better than on the natural surface of ground which has not been subjected to a similar course of preparation."

THE GARDEN.

—o—o—o—
 "This is an art

Which does mend nature: change it rather: but
 THE ART ITSELF IS NATURE."—*Shakespeare.*

WINDOW-GARDENING FOR THE POOR.

EVERY one knows, from one source or another, how many attempts have been made, mostly successful, to encourage a love of flowers and window-gardening among the poorer classes in several of our large cities, and notably in our great metropolis. We are glad to hear, from a correspondent at Manchester, that an effort is being made this winter to increase the love for plants through the medium of Hyacinths, which, it seems, are being given away, ready planted in pots of earth, by the hundred. The particular locality of this renewed effort appears to be Salford, a district corresponding to what in London would be called the Surrey side of the river. With every bulb there is a stout card, some 9 inches by 6, containing the following instructions and appeal. We are glad to reprint the whole in *THE GARDEN*, as the example and method pursued may, perhaps, stimulate philanthropic persons in many other places to a similar endeavour.

TO ALL WHO LOVE FLOWERS.

There is no home so humble, and no house so small or badly situated, but a beautiful flower of some kind may be made to grow in it. All that is necessary is to choose one of the right sort, and then to keep the plant as clean as possible, and to let the root have enough water. Of course the plant has to be kept in a pot of earth, and it should be let stand in the window, or as near to the light as may be convenient; for plants are like men and women—they are never so well off as when they have plenty of good light, plenty of pure air, and are kept clean. In order to be kept clean, the plant should be put out in the rain now and then, and be taken into the house again as soon as properly washed. By taking a little trouble of this kind any one may have a lovely flower in the house—first to watch while it is growing, and the green leaves are coming out; then while it is opening its beautiful blossoms, and giving out its sweet smell. If two or three plants are got, of course when one is over another will be coming on, and the house will be made cheerful month after month. If we cannot have a garden, a few nice plants in flower-pots are capital to go on with. They are delightful to look at, and to anybody who is ill their sweetness is sure to be a comfort.

The best kind of flowers to begin with in the house are those which have round roots shaped like Onions. Most of these have been brought from distant countries, where the air is warmer than in England. This is why they do so nicely indoors, as the heat of the fire comes natural to them. The name of the very best kind is the Hyacinth. If the root is put in a pot of earth any time in the early part of winter, there will soon come a little green point at the top, which in a few weeks will grow up into long green leaves, and by-and-by there will come a stalk of flowers, sometimes pink, sometimes blue, sometimes white, and giving out a most exquisite smell. If they are taken care of they will endure for a very long while. Who would not possess such a beautiful thing when to have it requires scarcely any trouble? Along with this paper there is given you a flower-pot, with the root of a Hyacinth in it. When you have got it safe home put it to stand in a saucer, and give it about half a tea-cupful of water, or rather more if the soil seems very dry. Give it another half tea-cupful of water, three or four times a week, and let it have all the sunshine and fresh air it possibly can as soon as the green point begins to grow into leaves.

When your plant is in full blossom you will be welcomed to a flower show, that will be held close at hand, of all the Hyacinths that have been given away along with your own, and it will be seen who has managed the plant best and got the nicest flower; and all who have managed well will be told how to go on with other kinds of plants, and have something given them, so that they may have something beautiful in the house all through the year, lovely to look at and sweet to smell. We don't want you to hugin and then leave off, but to have the house, or your own room, always provided with something lovely. God made the flowers for poor people as well as for rich people, and everybody is entitled to their share. Boys and girls of Salford! men and women of Salford! any of you that love what is beautiful, why not have a lovely flower in the house, that shall be a pleasure to yourselves, and a pleasure to everyone who sees it? Boys

and girls, in particular, remember it will be your own, and what can you have nicer and prettier for a start in the way of possessions? Boys and girls! let us go in for Hyacinths, the sweetest flower that grows, and a grand show of them to come on by-and-by!

It is earnestly hoped that clergymen and ministers of churches and chapels, and of all places of Christian worship; teachers also in Sunday and day schools, and in night schools as well, will give their aid and encouragement to the growing of window flowers in the homes of the mechanic and the poor man, who cannot enjoy many of the good things they do themselves. Good flowers can be got now-a-days at a very little cost. Our Lord tells us expressly to "consider the Lilies," and we cannot make a better beginning than by considering one that is growing in our own window. Remember, parents, teachers, preachers, all of you, that the tastes of children are mended, and that their manners are softened, when they are led to love and care for what is beautiful. When they are taught really and truly how to "consider the Lilies," and you put one into their hands so that they may have a good chance of doing so practically, and, day by day, depend upon it you are doing them no slight moral service. From the love of the beauty of the flower, how easy too to gather lessons as to the value to themselves also of sunshine, cleanliness, and fresh air.

NOTES OF THE WEEK.

— It will be seen by an advertisement in another column that Messrs. Veitch offer three handsome prizes for collections of fruit, to be competed for during the coming season, and others of a more special character for Grapes, Apples, Peaches, and Nectarines, the object being to make one grand assemblage, if possible, of the finest fruits grown in this country. Ninety pounds are to be thus expended—a sum greater than that offered in prizes at the last International Fruit Show at South Kensington. Let us, therefore, hope that such hearty liberality may meet with a correspondingly hearty response. The competition is confined to British produce, which must be grown by the exhibitor.

— MR. GILBERT, of Burghley, informs us that he has gathered, "this day (December 23rd) two dozen of Gloire de Dijon Roses. The blooms are not expanded, but by inserting the stalks in damp sand, and placing a hand-light over them in any of the forcing houses, they partially expand and come to be really useful."

— This mild season has brought Christmas Roses out in unusual profusion. *Helleborus niger maximus* is, in several localities, one mass of flower, and Mr. Perry informs us that *Helleborus atrorubens* and several kinds of *Cyclamen* are flowering most abundantly in the neighbourhood of Tottenham.

— MR. JAMES McNAB, curator of the Royal Botanic Garden, Edinburgh, who contributed a valuable paper on hardy Heaths to the last number of *THE GARDEN*, was unanimously elected President of the Botanical Society at its last meeting, in room of Professor Wyville Thomson. The Society was founded in 1836, and Mr. McNab is one of the original twenty-one members, only eight of whom are now alive.

— M. PLANCHON has addressed a note to the Paris Academy of Sciences, adhering strictly to the rule that no case of the new Vine pest should be recorded in which its presence on the Vines is not clearly proved by those well-marked characteristics which distinguish it from the white or flowery cochineal and the Vine louse.

— A GOLDEN-COLOURED TWIG of Douglas Fir has been sent to us by Mr. Charles McDonald, of Phoenix Park, Dublin, as an illustration of the ill effects, on certain kinds of Conifers, of this remarkable season. The Fir in question is growing in a plantation of Austrian and other Pines, which are remarkably healthy. The tree from which the twig was taken is about 7 feet in height, and it is wholly of one colour, which is very much like that of a good *Thuja aurea* in spring. The plantation is high, and not influenced by standing water, and the contrast which this tree makes with the dark Austrian Pines is very striking.

— WE hear of the arrival at Chicago of thirteen bales of Blue Mountain tea, weighing 1,920 lbs., from Tower Hill, Schnylkill county. This tea is composed of the leaves of a variety of the golden rod family, botanically known as *Solidago*. It is gathered in large quantities on the Blue Mountains and the mountains to the north of that range. The tea matures in the latter part of September, and it is gathered until late in October. It is then cured and put up in packages, selling on the mountains at from twenty cents to thirty cents per pound, but retailing in villages and towns at one dollar per pound. The tea has a very pleasant, aromatic flavour, and is held by many persons in great esteem.

— We learn from the *Lancet* that there is to be an arrival in London shortly of 25,000 lbs. of Cinchona bark from the Madras Government.

— In the *Russian Official Gazette* is an announcement that a diploma of honour has been conferred upon Baron Liebig for the application of his knowledge of theoretical chemistry to practical purposes.

— COVENT GARDEN MARKET, which usually attracts great crowds on Christmas-eve, was this year less interesting than even on ordinary occasions. Dealers complained of dulness of trade, and business transactions were generally confined to the most common articles of consumption.

— MORE than three-quarters of an inch of rain was measured at Greenwich during the last week of last month; the fall for November being thus raised to 2.9 inches. The rain measured during October and November was 7.3 inches, or 2 inches above the average fall in fifty-six years.

— WINTER has set in in earnest in America. On Christmas-eve the thermometer at Milwaukee stood at 30° below zero, Fahrenheit. At Chicago the thermometer marked 20° below zero. Notwithstanding, however, such great cold, we hear of Tea Roses being preserved in the open air by being covered with 6 or 8 inches of forest leaves.

— MR. PETER HENDERSON states, with reference to the *Myrsiphyllum asparagoides*, to which we have several times directed attention, that there are in New York and Boston probably twenty greenhouses, having an area of 20,000 feet, used exclusively for its growth, with smaller houses in every city of any pretensions all over the country. Besides this, thousands are grown as window plants by private individuals. No plant is better fitted for house culture, as it grows in any temperature from 50° to 75°, and does well in comparative shade.

— HOWEVER humiliating, says the *Daily News*, it is a fact that there are almost no English Apples to be had for this year's Christmas dessert. The miserable crop of last autumn is already exhausted, and quotations of from twelve shillings to twenty shillings a bushel produce no effect on owners of Devonshire orchards. Covent Garden has to make the best of the Newtown Pippins, which are arriving freely from America. That and other American varieties fill the market, with the exception of the usual supply of Lady Apples from France, now selling at from one shilling to two shillings a dozen.

— EXTENSIVE improvements, which, when completed, will add materially to the beauty of Victoria Park, are now being carried assiduously on. The slopes of the great lake, which are now formed of barren clay, are being laid with turf, whilst instead of burying the sediment of the lake, it will be used in the construction of mounds, dotting the park at various points, and planted with evergreens and flowering shrubs. The mud of the lower bathing lake will be used to heighten the already existing mounds and shrubberies around it, and will thus afford additional privacy for bathing. The road between the Royal and Queen's Hotels (about a quarter of a mile) will be planted on either side with shrubs and forest trees.

— THE question has often been debated whether flies eat the pollen of plants, or merely carry it away accidentally on their legs and backs. This question would appear to be set at rest by a paper read at the last meeting of the Scientific Committee of the Royal Horticultural Society by Mr. A. W. Bennett, in which it is stated, as the result both of his own observations and those of Erm. Müller, that the microscopic examination of the stomachs of Diptera belonging to the order Syrphidæ, shows them to contain large quantities of pollen-grains, especially of plants belonging to the order Compositæ. Entomologists had expressed a doubt as to whether it were possible for insects possessed only of a suctorial proboscis to devour such solid bodies as pollen-grains; but Müller believes that the transverse denticulations found in the valves at the end of the proboscis of many Diptera are especially adapted for chewing the pollen-grains, and for dividing the threads by which the grains are often bound together.

— THE following sensible questions are proposed to its readers by the *Albany Country Gentleman*:—1. What is the difference in prices received for Apples carefully selected and neatly put up for market, and those packed under ordinary management, without this care? 2. What difference is there in quality and price between Apples grown on trees well cultivated and cared for, and those on neglected trees growing in grass. 3. What experiments have been made in thinning out the wormy specimens early in the season, so that the remainder may be good and fair, and not small and crowded—and with what results? 4. What experiments have been made with fruits generally, in thinning and reducing the number, and what were the results on the amount of the crop, and on prices? 5.

Is there any better way of keeping Apples and other fruit in winter than in a good, dry, well ventilated cellar? Or is there some better artificial process? Are shelves, boxes, or barrels best to keep fruit in? 6. What experience have we on the superior value in market of small fruits raised with extra care and high culture, over those under common or careless management? 7. What difference is there in the general value of orchards and their crops, with the soil kept mellow and cultivated on the one hand, or in grass on the other? 8. What is the comparative profit of raising fruit, as a general average, or on the long run, and common farm crops? 9. What kind of fruit-raising brings the largest returns near cities, and which in the country, remote from cities? 10. Is it most profitable to raise fruit by cheap methods, so that but little money will be required to meet expenses, to give high culture at greater cost?

— As one among many instances of the unusual mildness of the season, it may be mentioned that ripe Strawberries were gathered on Christmas-day from a bed in the open air in the neighbourhood of Greenhithe.

— SEVERAL communications relative to "yellows" in the Peach were read at the recent meeting of the State of Michigan Pomological Society, and all the writers are said to have coincided in the belief that the slitting of a tree and the application of "hot lye" will eradicate the disorder.

— At Bordeaux the *Amorphallus Rivieri* is employed as an out-of-door ornamental plant. The spathes, which are of a blackish green, grow to the considerable dimensions of 5½ feet in length by nearly the same in width. When laid out in groups of four or five together they are said to have a very pleasing effect. It is also spoken well of in America, where it grows and increases freely.

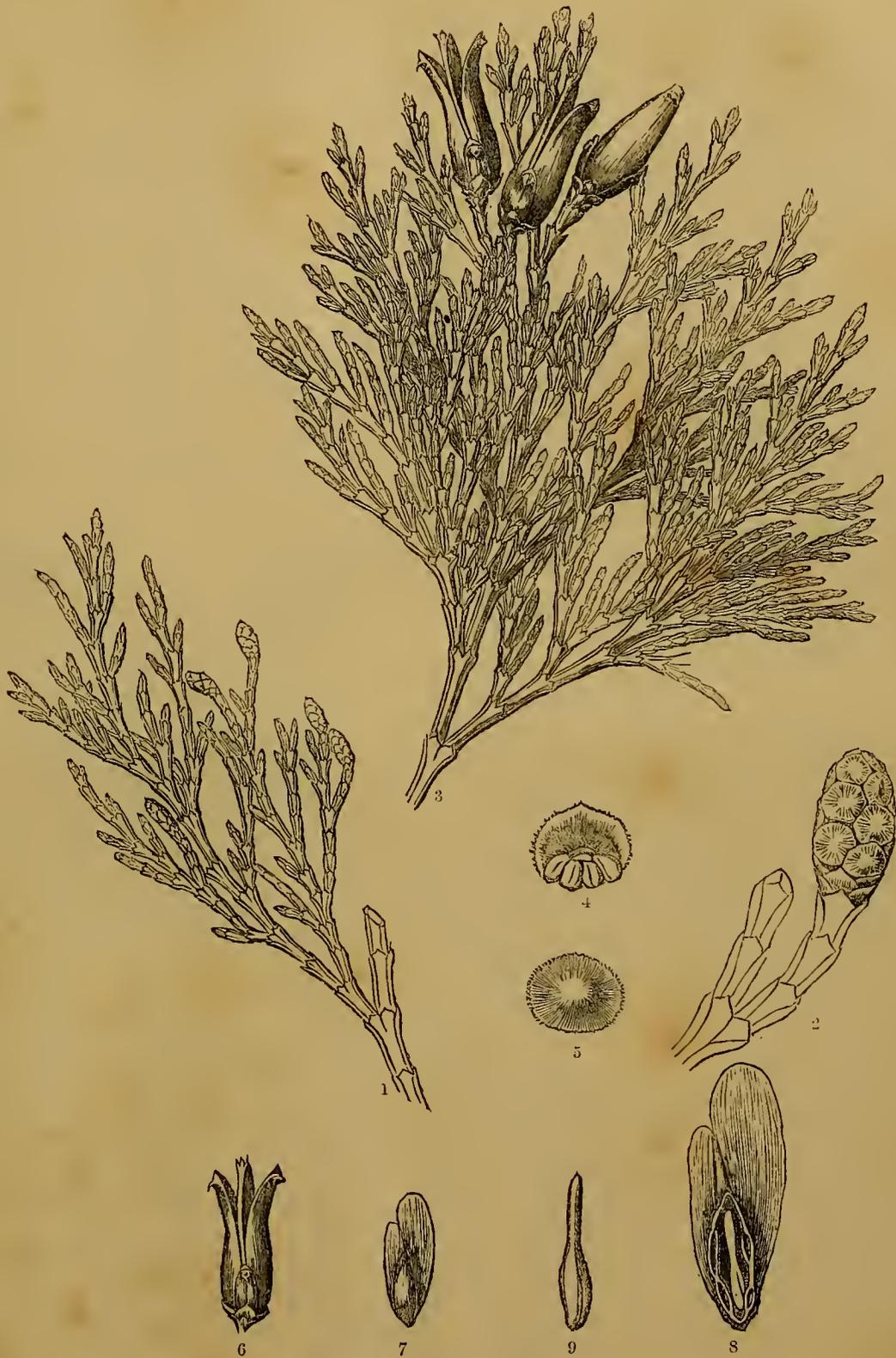
— We find in the *Western Planter* five different prescriptions, from as many orchardists, for protecting trees from the teeth of rabbits. One places a thin layer of weeds or refuse hay around the stems, fastens it with a tough weed, or tie of straw, and has thus saved five hundred trees for many years. Another rubs the bark with a fresh hog's liver or other bloody offal. Another has equal success with strong-smelling grease. Another applies a paint of butter-milk and soot when snow falls, and again in March, and the last smears the bark with the blood of the Thanksgiving turkey.

THE ARBORETUM.

LIBOCEDRUS DECURRENS.

THE exceptional height and magnitude of certain trees in California is very generally assumed to be in some way due to the climate, and those who so regard it point to its effects upon man himself as corroborating their hypothesis. Be that as it may the tree of which we are about to speak is one of those which in California attain to unusual size, while its congeners in the old world and to the east of the Rocky Mountains are not so distinguished. The Cypresses and Junipers are generally of moderate dimensions, but in California the ordinary rule is reversed; there it is the minority that are small, and the majority attain a gigantic size. The Wellingtonia, the Redwood, *Cupressus macrocarpa*, *Thuja gigantea*, and the subject of our present notes, the Californian white Cedar (*Libocedrus decurrens*) will occur to every one as illustrations of this remark.

The *Libocedrus decurrens* was discovered by Colonel Fremont; but in what year or in what expedition is uncertain. Colonel Fremont made several exploratory journeys into California, and the products of his different expeditions seem not to have been kept separate. His first expedition was made in the year 1842, and did not extend into California. Starting from the east coast he reached, but went no farther than the Rocky Mountains, at that time a country almost unknown and surrounded with danger. His second expedition took place in 1843 and 1844, and embraced not only his former ground, but also extensive regions of Oregon and California. In that journey he made large botanical collections in places never before visited by a botanist, but unfortunately a great portion of them was lost. In the gorges of the Sierra Nevada a mule laden with some bales of botanical specimens gathered in a thousand miles of travel, fell from a precipice into a deep chasm, from whence they could not be recovered, and a large portion of the remainder of the collection was destroyed on the return of the expedition by the great flood of the Kansas



LIBOCEDRUS DECURRENS, TORR.

1. A branch bearing male aments of the natural size.—2. Portion of the same magnified.—3. A branch bearing mature fertile aments of the natural size.—4. An anther, seen from the inside, magnified.—5. The same, seen from the outside.—6. A mature cone of the natural size.—7. A seed slightly magnified.—8. Vertical section of the same, more magnified.—9. The embryo, separated, and still more magnified.

river. His third expedition was made in 1845 and the two following years; but again, notwithstanding every precaution, some valuable packages were destroyed by the numerous and unavoidable mishaps of such a hazardous journey. A fourth expedition was made late in 1848, which proved disastrous, and only a few plants were gleaned from it.

The whole of the botanical collections made in these expeditions was placed by him in the hands of Dr. Torrey, with a view to publication. A few of the plants had already been published in the "Botanical Appendix" to Col. Fremont's "Report of his Second Expedition"; and after the third expedition, a few more, belonging to the Compositæ, were published by Dr. Gray. Of the remainder, only a very few were published by Dr. Torrey in a paper in the "Smithsonian Contributions to Knowledge," entitled "Plantæ Fremontianæ, or, Descriptions of Plants, Collected by Col. J. C. Fremont in California, by John Torrey, F.L.S."; and in it, p. 7, t. 3, was described and figured, for the first time, the *Libocedrus decurrens*. The paper was received by the Smithsonian Institution in 1850, and an abstract of it was read to, and published by, the American Association for the Advancement of Science in that year. At that time the gentlemen in Edinburgh who organised the Oregon Botanical Association were arranging with Jeffrey to go out and explore some of the districts which Col. Fremont had partially visited. He set out towards the close of 1850, and in 1852 he met with and collected and sent home specimens of the *Libocedrus decurrens*, which were received in the spring of 1853, and, as usual, specimens were forwarded to Sir W. Hooker and Dr. Lindley, then the two highest authorities on botanical subjects in Britain, for their opinion. To their enquiries regarding this species, Sir W. Hooker replied, "Quite new; perhaps No. 1,972 of Hartweg's Californian plants, of which my specimen has only unripe fruit"; and Lindley said, "A magnificent new species." Fortified with these opinions, the Committee described and figured it, under the name of *Thuja Craigana*, in a circular which was sent to their subscribers and distributed among botanists; the specific name being given in honour of Sir William Gibson Craig, one of their number, celebrated for his zeal for, and knowledge of, arboriculture, and more especially of Coniferous trees.

It is to be borne in mind that, at the time when Professor Balfour and the rest of the Edinburgh Committee, in common with Sir Wm. Hooker and Dr. Lindley, came to the conclusion that this species was undescribed, it really was so to all intents and purposes; for although an abstract of Dr. Torrey's paper had been published in the "Proceedings of the American Association for the Advancement of Science," in the end of 1850 or beginning of 1851, an abstract of a botanical paper does not tell much, and the paper itself, although placed in the hands of the Smithsonian Institute in 1850, was not published until April, 1853, about the very time when the committee of the Oregon Botanical Association sent out their description. The latter is without date, but from internal evidence it can be fixed to the spring or summer of 1853, and but for the publication of Torrey's abstract in 1850, it would be a question of priority of date of actual publication between the name given by Dr. Torrey and that by the Oregon Committee, viz., *Libocedrus decurrens* and *Thuja Craigana*. But another confusion by-and-by followed. Carrière erroneously supposed that this was the species described by Nuttall under the name *Thuja gigantea*, and accordingly, in his Synopsis, shelved the name *Libocedrus decurrens* (he does not seem to have known of that of *Thuja Craigana*), and gave it the name of *Thuja gigantea*; and the result of this error has been the greatest confusion regarding the name of this species ever since, for his nomenclature was adopted by some authors who followed him, and repudiated by others, so that one never knew which plant was meant when it was spoken of. It now begins to be more correctly understood.

The discussion of nomenclature, however, although necessary, is dry work, and we gladly pass to the tree itself. The figure which we give is taken from Torrey's plate, is very characteristic, and renders verbal description unnecessary. It shows well the only character of any value on which the genus *Libocedrus* has been separated from *Thuja*, viz., the long decurrent bases of the leaves. Every other character given is either variable or erroneous, for instance, the figures of the seed with a bifid

wing 7 and 8, which is made a character by Torrey, Hooker, Endlicher, Parlatores, and other authors, is taken from a malformed seed; the wing is in reality single and simple as in Conifers in general, and is rightly figured in the plate given by the Oregon Committee.

As already said, it is a noble tree of large dimensions. According to Fremont it attains a height of 120 or even 140 feet, with a trunk of 7 feet in diameter, and rises from 80 to 100 feet without a limb. Dr. Newberry in the "Pacific Railroad Reports," states that at McCumbers, in Northern California, where he found it more abundant and attaining a greater size than anywhere else, it rivals even the Sugar Pine in diameter of trunk, though it never attains an equal altitude; and he confirms Fremont's dimensions, for he says that many of them were 6 to 7 feet in diameter at 3 feet above the ground, with an altitude of more than 100 feet. Jeffrey found his specimens at Klamet, 5,000 feet above the sea, not half the above dimensions. He describes the tree as 40 feet in height and 3 feet in diameter, and adds what we do not learn from any other source, that it has an umbrella top. Our readers will, perhaps, remember that a figure which we gave some time ago of *Cupressus macrocarpa* (also a large Californian Cypress) had the same character, which it is unnecessary to say is not a usual one with Cypresses in the old world. It is found in the Sierra Nevada and Northern California, and also in the Rocky Mountains.

It was first introduced into this country by the Oregon Botanical Association, from seeds sent home by Jeffrey, and consignments of seeds have frequently been received since, so that it is now plentiful in England, is perfectly hardy, and promises to be a valuable acquisition to English scenery.

A. M.

ROAD-SIDE TREES AND TELEGRAPH WIRES.

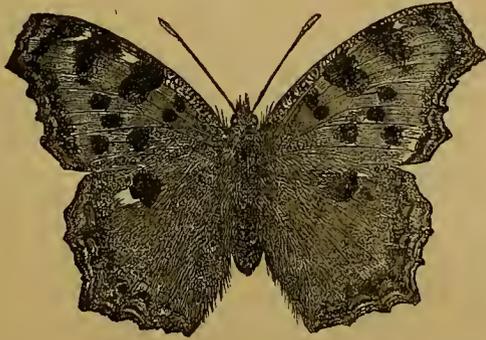
MR. McNAB recently read a paper at Edinburgh on the disfiguration of trees along road-sides to suit telegraph wires. In the olden times (he said) travellers by stage-coach used to be delighted with the beauty of the hedgerow-trees which then skirted the highways, but now there was a system of disfigurement constantly going on all over the country through the introduction of telegraph wires. What he objected to was the injudicious lopping of the branches of road-side trees to make way for the wires. In many districts this lopping was very carelessly done. It could not be all done under one inspector, as the trees in some localities showed that they had been discretionally dealt with, while in others they were handled in the most ruthless way possible, many of the limbs being cut several feet from the main stem, and the bark often much torn by the weight of the falling branch before being finally cut through, showing the want of the undercut essential in good pruning. In many cases the trees remained in a sad plight, to their ultimate deterioration, besides being disagreeable objects to look on. Where there had been previous good pruning the telegraph authorities had little trouble in erecting their wires, but with unpruned or carelessly pruned trees the greatest difficulty was experienced. In unpruned specimens the branches had generally as much spread as the height of the tree. In such instances the branches were frequently all lopped off on one side, presenting the cut surfaces to the road. Sometimes, as has been stated, those branches were not cut close to the stem, and during the following year a multitude of lateral shoots were produced, which in time came in contact with the wires. Trees of low stature had their top points removed, so as to keep them below the line of wires, and in such cases upright shoots were produced, which in time came in contact with the wires. In many parts of the Highlands it was grievous to see finely outlined weeping and other Birch trees totally spoiled by having one side completely hacked up. It was quite possible to prune trees for the telegraph purposes without the barbarous cutting so often resorted to. In all cases such work should be entrusted to some experienced gardener or forester belonging to the proprietor whose land it was proposed to skirt, as they were, or ought to be, the best judges of the effect of pruning the various species of hedge-row trees both in and out of season. It was to be hoped that parties would not be deterred from planting trees along our road-sides from the fear of being required sooner or later to have them cut down. Trees were a great ornament in rural districts, and their further progress ought to be encouraged. All new planters should be careful to have the trees regularly stem-pruned, so as to induce an upward growth, as there was no saying how soon telegraph wires might reach them, and if so treated, they would be in a better position to be left untouched than if stem pruning were neglected.

GARDEN DESTROYERS.

LARGE TORTOISESHELL BUTTERFLY.

(VANESSA POLYCHLOROS.)

THE horticulturist or agriculturist has not much to complain of in the butterfly race. With the exception of the white Cabbage butterfly and its allies, these beautiful creatures do little damage to his crops, and he may give way to his feelings of admiration of their beauty without any qualification or alloy on economic grounds. The species which we here figure is one of the few exceptions to our general remark. Its caterpillar feeds upon the leaves of the Elm, whence it has been called the Elm butterfly; but it also, under the pressure of necessity, contents itself with the different species of Willow, Aspen, or various fruit trees; but it has been observed that when it has been reared upon Willow leaves the perfect insect is much below the ordinary size, indicating that these leaves have not supplied such suitable nourishment as its natural food, the Elm. The same is no doubt the case with the other trees it occasionally resorts to. Boisduval mentions that he has seen Plum and Cherry trees completely defoliated by the caterpillars of this butterfly. The female moth passes the winter in a torpid condition in some suitable shelter, from which she comes out in spring; she lays her eggs (from 150 to 200) in a cake on a bough of the tree on which the larvæ are to feed. The eggs are reddish-brown, and above star-shaped. From these the cater-



Large Tortoiseshell Butterfly.

pillars are developed in a few weeks in May, and stay feeding in company with each other until after the first casting of the skin. In their young state they spin a loose nest, attached by threads to the leaves and branches, and in it they spend their lives at first; but after their first change of skin they separate, and spread themselves each according to its own desire over the tree, or wander to neighbouring plants. These nests are sufficiently conspicuous to attract the attention of arboriculturists, and should be removed with their inhabitants and destroyed. The caterpillar at first is blackish, and very hairy, afterwards brownish, with a longitudinal stripe of a tawny colour along each side, and thorny, with long, stiff, yellowish spines, a little branched at the top.

By the middle of June the caterpillars have attained maturity, and pass into the chrysalis state. The pupa is very angular, with two sharp points like ears on the head, and hangs head downmost; it is of a brownish-gray, or dull flesh-colour, speckled with gold or silver spots.

The butterfly comes out in July and August. The cut shows its appearance; its ground colour is tawny brown with black and yellow marks. In appearance it is very similar to the Nettle butterfly (*Vanessa urticæ*), but is larger, and it may at once be distinguished by the outmost light patch on the anterior margin of the forewings being yellow instead of white, which it is in the Nettle butterfly. The under-side, too, is more uniformly brown and black. In the other the fore wings have a large portion pale and yellowish. Single individuals come out from time to time during the season, giving rise to the idea that there are two or three generations in one season; but Boisduval rightly maintains that there is only one generation in the year. The insect has a wide geographical distribution, being found over all Europe, in Algeria, the Caucasus, the Himalaya, and in Siberia and Japan.

A. M.

GARDEN RECIPES.

HOW TO PROTECT FRUIT BUDS AND SEEDS FROM BIRDS.

THE most effective device for preserving Peas, Cherries, &c., from the attacks of small birds, is the imitation hawk, which may be made in the following manner:—Take a good sized sound Mangold Wurzel, and with a pocket-knife roughly shape it into something like the body of a bird, stick some turkey's (or any large dark-brown) feathers in on each side for wings, not forgetting to add a good wide-spread tail. Now bore a hole through the body from back to breast; through this pass a piece of stout string, and secure it by tying a small piece of wood on as a stopper under the breast. The other end of the string should be attached to the end of a long flexible rod, which is then to be tied on to a branch of the fruit tree or the top of a Pea stake in such manner that the suspended "hawk" may swing freely to-and-fro clear of the branches, &c. If properly hung, it will represent a hovering bird of prey so well, that even the astute jay makes a hasty retreat as soon as he catches sight of it. Three or four of these "hawks" have been found a complete protection in a large-sized garden.

A stuffed cat is also an excellent bird searer, and, if placed in a conspicuous position, will protect a large patch of seed beds, or a number of trees or bushes. The skin may be stuffed in the rudest manner with hay, putting sticks into the legs. With a little care it will last for years. It should not be forgotten that before it is stuffed, it must be well salted or otherwise prepared against putrefaction.

The following simple plan has been found most effectual in protecting Gooseberry and Currant bushes. Take a ball of grey or whitey-brown linen thread, fasten the end of it to one of the twigs of the Gooseberry or Currant bush, and then cross the thread backwards and forwards from twig to twig in perhaps a dozen different directions, and fasten off. It is not necessary that the thread should be white or coarse; it ought rather to be fine and dark—a thing to be felt, not seen. The birds come boldly to settle on the trees, and they strike against these to them invisible snares, for such no doubt they deem them to be; they fly off in a hurry, and settle on the walls or trees round about, longing and getting hungry, till at last they disappear. Small fruits grown on trellises placed 3 feet apart or so are much more easily protected than when grown in the common bush form, by passing a net over the tops of the trellises. This plan permits of the fruit being readily collected, a man or boy passing easily between the lines.

As regards Peas and other seeds sown in drills, simply stretch a thread, sometimes two, along each drill, at about 2 inches from the ground, supporting it at that height by little forked sticks. If you put it much higher than this, the birds do not seem to care for it—it *does not touch them*; that is the grand secret, something which touches them, something they do not well see, nor know what it means. Some people use thick white strings with feathers tied to them, and placed perhaps 2 feet from the ground. The birds soon understand these, and care little for them; in short, they sometimes seem to act as a lure, a notice to the birds that there is something to be had worth looking after, but anyone adopting the plan recommended will have little cause to complain of the birds, however numerous they may be.

A hank of tow well teased on the bushes, so as to leave a number of waving fragments that will move with every breath of wind, is recommended by those who have tried it as one of the best possible means of protecting them. Tow appears to be one of those things which no bird can understand, notwithstanding that they quickly penetrate and despise the not very dissimilar mystery of rags employed in the same way; of the tow they are wisely suspicious, and keep at a safe distance.

In Cornwall, as soon as the winter comes on, the Gooseberry bushes are bound tightly round with thick straw ropes, in order to protect the buds, which are thus placed beyond the reach of their greatest destroyers—the bulfinches.

In the market gardens round London during the spring and early summer, when the Cabbage tribe, Radishes, &c., are sown in great quantities, one or two boys are kept purposely to frighten the birds. The boys have to work pretty hard, for no sooner have they passed one corner than the birds reappear; in fact, the boys watch the birds, and the birds

watch the boys. Sometimes a gun is employed, more especially for bullfinches and other birds that destroy the fruit buds. Early-sown seeds are sometimes covered with rank litter until they germinate, and afterwards protected during the day by boys. In large nurseries, where extensive ranges of coniferous seed-beds are in danger, boys and women are employed to frighten the birds until the plants have advanced sufficiently to be uninjured by them. In some establishments, prior to sowing quickly-germinating seeds, such as the Cabbage and Turnip tribes, the seed is slightly moistened and then mixed with red-lead, which, from the dampness of the seeds, attaches itself to their skin. This does not prevent their germination, and renders them secure from the ravages of birds. This process is also beneficial in showing the thickness and equality of sowing, as the red seeds are more easily distinguished than those the colour of the earth.

To protect seeds in a private garden, the simplest and best of all methods is to sow as many of the seeds as possible in one compact spot of ground, in beds not more than a yard wide. These should be covered with finely-meshed galvanised wire, nailed on rough frames 4 or 5 inches high. This precaution quite saves the seeds from birds. The frames are not expensive, and are very useful throughout the greater part of the year.

F.

THE INDOOR GARDEN.

MARANTAS.

As stove plants Marantas have few equals in point of beauty, but I have never seen them look happy when used for indoor decoration. If a strong moist heat can be commanded no plants with which I am acquainted can be more easily grown into good specimens than these; the soil should be good fibrous peat, with the addition of a little loam and sand. Marantas enjoy plenty of water, and therefore the drainage must be kept in perfect order; where such is the case, all through the summer season it will be scarcely necessary to look at the plants, but water well every morning, syringe them morning and evening, and keep the floors and tables frequently sprinkled during the day. If these rules are followed, the results will be marvellous; of course during winter the supply of water must be to a great extent withheld. The rock on which many amateurs strike, in growing these plants, is potting them in soil which is too close and heavy, and in starving them for want of water both at the roots and in the atmosphere; thus their hopes and their plants become prostrated, and they are fain to acknowledge that they do not like Marantas, simply because they have not treated them in a manner to cause them to grow vigorously, or to display their rich markings to the best advantage.

The following twelve will all be found to conform to the above treatment; and all of them are superb stove ornaments well deserving attention.

M. chimboracensis.—Leaves when fully developed about a foot in length; their ground colour is a cheerful light green; over this is an irregularly-shaped band of deep olive green which extends the whole length of the leaf, whilst the outer edge of this zig-zag band is margined with silvery white, giving it a peculiarly beautiful appearance. It comes from Ecuador.

M. Lindeniana.—In this plant we have one of the most beautiful of the genus; the blade of the leaf is oblong, supported upon long footstalks; the ground colour is rich deep green, having continuous blotches of yellowish white on each side of the midrib; the reverse side of the leaf is light rosy purple. Native of Peru.

M. vittata.—This, though no novelty, will be found, when well grown, to be one of the most pleasing; the leaves are about 9 inches long, ovate-acuminate in shape, and supported upon long footstalks. The ground colour is bright light green, having a profusion of transverse bars of metallic whiteness on each side the midrib. Native of tropical America.

M. virginalis.—This is a plant of a totally different habit from the preceding, as the leaves have comparatively short petioles, and consequently it is of dwarfer habit. The leaves are broadly ovate, the ground colour a bright light green, and the broad midrib white,

with a white band on either side of it; the under surface is greenish-white. Shores of the Amazon.

M. rosea picta.—This, which is similar in habit to the preceding, has large orbicular-shaped leaves of an intense deep shining green; the midrib is rich rose colour, whilst midway between it and the outer edge a rosy-waved line traverses the entire length of the leaf; the underside is deep red. I have invariably found that exposing the leaves to the sun's rays causes the rose colour to change to white. It is necessary, therefore, to shade this species more than the others. It is a native of Loreta, on the Amazon.

M. tubispatha.—Quite a gem; its leaves are bluntly obovate in shape and from 9 to 12 inches in length; ground colour pale green, beautifully ornamented with pairs of oblong blotches of rich brown on each side of the midrib, and which extend from base to apex. Native of tropical America.

M. fasciata.—An old species, but a very distinct and beautiful one; its leaves are broadly heart-shaped, measuring, when well grown, about a foot in length, and about 6 inches in breadth; the upper side is dark green, having broad stripes of metallic white running from the midrib to the margin, while the under side is greenish purple. Native of Brazil.

M. alba lineata.—A beautiful plant, producing leaves from 6 to 12 inches long, and from 2 to 3 inches in breadth; they are more frequently seen, however, of the smaller dimensions; they are ovate-acuminate in shape, the upper side intense dark green, transversely striped with lines of silvery white. Native of South America.

M. rosea lineata.—This is usually stronger in growth than the preceding; its leaves are broadly ovate in shape, and taper to a point; ground colour intense dark green, striped with transverse lines of deep rose, the outer side of the leaf being of a uniform rich rosy-purple. Native of the tropics of South America.

M. splendida.—A fine species of somewhat strong growth; the blade of the leaf is oblong-lanceolate, and from 9 to 18 inches in length; ground colour deep olive green, irregularly blotched transversely with greenish yellow. Native of Peru.

M. illustris.—This is a dwarf compact plant of great beauty; leaves somewhat ovate in shape, and vivid green in colour, streaked transversely with bands of dark green; the midrib is waxy-looking, white tinged with pink, whilst midway between the midrib and margin there is an irregular band of metallic whiteness, the under side of the leaf being deep purple. Native of Ecuador.

M. Veitchii.—I have reserved this species until the last, because it is, without doubt, the finest of all with which we are yet acquainted; the blade of the leaf is upwards of a foot long, with a foot-stalk from 12 to 18 inches in length; the leaves are ovate-elliptic in shape, the ground colour a deep shining green, with crescent-shaped blotches of greenish yellow shaded with grey on each side of the midrib; the under side is rosy-purple, through which the markings on the upper side appear with charming effect. Native of tropical America.

G.

RESTING ORCHIDS.

EVERY person acquainted with this class of plants will readily admit that, as a rule, rest is essential to their successful cultivation. There is, however, a great difference in the duration as well as in the manner of resting the different species of Orchids which we have now in cultivation. In their native habitats they are materially influenced by the various atmospheric conditions in which they are for the time being placed. Take, for example, our own native terrestrial Orchids—*Listera* and *Habenaria*. During winter, they are silently resting beneath the surface of the earth; but though resting, they are, as a matter of course, liberally supplied with moisture. In a manner analogous to this, the glorious South African *Disa grandiflora* is partially or entirely submerged during its period of repose; and when cultivating it here at home we find it necessary to keep it in a state of moisture nearly the whole year round. On the other hand, we find many Indian Orchids—terrestrial ones—as *Cypripedium concolor*, *Phalænopsis Lowii*, and others that rest during the hot and dry period of the year, and only commence their growth with the rainy season. Indeed, the *Phalænopsis* alluded to is often dried off, and becomes deciduous, on its native rocks in Moulmein. In cultivation, however, it is inadvisable to subject it to such treatment, and, as it retains its foliage throughout the year, its rest with us is far less decided. Again, *Calanthes*

—or rather Preptanthes—may be kept comparatively dry for three months without doing them any material injury. On the other hand, some of the cooler-growing Oncids and Odontoglots, as *Oncidium macranthum*, *O. serratum* (diadema), *Odontoglossum Alexandræ*, *O. Uro-Skinneri*, and many other species require but little rest; indeed, with these the period of repose is reduced to a minimum, as they persist, if left to themselves, in growing and flowering all the year round. More especially is this habit shown when the plants are grown in a cool, airy, and moist atmosphere. Cattleyas and some of their congeners, the *Lælias*, exhibit the same

being far more essential that they should be induced, as far as possible, to produce leaves, pseudo-bulbs, and roots. Some of the very finest Phalænopsids in this country may be found at places in which they are allowed to produce but one crop of flowers annually, and even under this treatment their young flower-spikes are judiciously thinned out, so as to leave the one or two remaining to be of the finest quality. Fine plants are often found in places where they cut nearly every flower-spike as its blooms expand. As an illustration of this, I may point to one of the finest collections of "cool Orchids" in Europe, that of Mr. E. Salt, at Ferniehrst, near Leeds;



Maranta Veitchii, from a Plant in Messrs. Veitch's collection.

tendency to keep on making a perpetual growth, more especially if supplied with air and moisture, added to a moderately cool temperature of, say, 50° to 55° at night. Still it must be allowed that a periodical season of repose is more essential to insure the profuse production of flowers on these plants than it is in the case of the Oncids and Odontoglots before mentioned. There is, however, another way of resting Orchids, and one which is apt to be overlooked, though a fact of the greatest importance. Sickly plants should on no account be allowed to produce flowers, it

there scores of fine spikes are cut off the plants as soon as their flowers fully expand. This systematic process of removing the flowers relieves, or, in other words, rests the plants operated on much more than is generally supposed. It induces an energetic propensity for making fine and vigorous growths, and well-ripened, plump, pseudo bulbs, and hence the plants are far better able to produce an abundant crop of fine spikes and well-formed flowers the year following than they otherwise would be. The mere production of flowers alone, however, requires barely half the constitutional energy which

is requisite to produce both flowers and perfect fruit, and therefore, but few Orchids in cultivation, comparatively speaking, are capable of producing perfect seed, even when assisted by artificial means. How different is the case in their native habitats! In fertile tropical regions they luxuriate with a vigour unknown to us here, and in many cases produce abundance of seeds, which, ripened in the genial light, heat, and air of a tropical climate, eventually become scattered on the trunks, stems, and branches of trees, where they germinate in countless hundreds, and thus fill up the deficiencies created by naturalists and collectors.

When at rest, Orchids should not be kept in a hot and dry temperature, or it will be found that they will suffer materially from evaporation. How often do we see many rare and valuable species "resting," as it is termed, in the full blazing sun, under a glaring crystal roof, and surrounded by a parched atmosphere? Day by day their pseudo-bulbs become more wrinkled, their leaves more like brown paper, and yet this pernicious system of treatment is called "rest." True rest would never rob the pseudo-bulbs of a large proportion of the sap, or elaborated juice, which had been secreted during the preceding season's growth. It is not rest which leaves them in a sickly, debilitated condition, too much exhausted to produce either growth or bloom.

Another erroneous impression is, that all Orchids require to be rested during our winter season, or, if not actually rested, kept much drier than during the summer months. This rule, though applicable to some Orchids, must not by any means be applied indiscriminately to all, since we have many Odontoglossums, Oncids, Dendrobiums, Disas, and Masdevallias, to say nothing of many species belonging to other genera, which commence their growth during our autumn and winter months. To attempt to rest such as do this, or to withhold a sufficiency of moisture either in the atmosphere or at the root, cannot possibly conduce to useful results, but, on the contrary, would do the plants permanent injury. The best results are invariably obtained by cultivators who are ever watchful and careful to assist Nature's efforts, and who are equally cautious never to thwart her in her workings, knowing, as they do, that she is invariably the best, and, in some cases, the only reliable guide to success. The cultivator who would succeed with Orchids, more especially with such as are grown in the high temperature of the East Indian house, should be careful to supply an abundance of moisture to the atmosphere of the house during dry, sharp, frosty weather. This may sound absurd to some, but the reason for recommending this course of treatment is obvious. During frosty weather, as a rule, the atmosphere is drier than at any other time, not even excepting the hot days of summer; and in addition to this unnatural dryness, which a glance at the hygrometer will prove, the hot-water pipes are generally scorching hot; add to these two unnatural conditions the careful use of water so often advised during winter, and one need not wonder at Vandas and Aerides becoming parched and shrivelled until they look more like leather thongs than what they ought to be if rationally treated. Again, how often are we told that Orchids when in bloom should be removed into a cool and dry temperature, in order that they may last longer in beauty. Do they last longer in perfection in a cool and dry atmosphere than they would in a cool and moderately moist atmosphere? I have found the latter to be most favourable to the preservation of flowers, and which I am fully convinced, from experiments with cool Odontoglossums and Oncids, will be found to be the case generally. In a dry atmosphere, flowers as well as bulbs and foliage, continually suffer from excessive evaporation, a state of things we should endeavour to avoid as much as possible.

A careful and observant cultivator quickly detects by external appearance when any individual plant is about to rest, and then acts accordingly, only supplying just enough moisture to the roots and in the atmosphere to prevent the plant from losing its concentrated energies by means of evaporation. This much must be supplied or the plant will suffer far more than it would from being furnished with too much moisture, although more than will prevent the bulbs and leaves from shrivelling is decidedly injurious to plants when at rest.

F. W. BURBIDGE.

ORCHIDS IN FLOWER IN DECEMBER.

THE following list may interest some of your readers. It shows what was in bloom on the 7th instant, and what would be in bloom within a week (the latter names having a * appended to them), in the fine collection of John Day, Esq., of Tottenham, which was looking in first-rate condition.

Ada aurantiaca	Dendrobium heterocarpum (aureum)	Odontoglossum Cervantesii*	Oncidium Papilio unguiculatum
Aerides suavissimum	Epipendrum ciliatum*	grande Hallii*	Pescatorea Dayana
Angreum bilobum	equitans	Insleyi	Phalenopsis amabilis
Calanthe sesquipedale	pseud-epiden- drium*	Lindleyanum	cornu-cervi grandiflora*
Veitchii	Helcia sanguinolenta*	lateo-purpu- reum*	Schilleriana*
vestita	Laelia acuminata (peduncularis)	zebulosum	Pilumna laxa
Cattleya bulbosa*	albida	Pescatorei pulchellum*	Restrepia elegans
exoniensis	anceps*	tripudians*	Schlimmi
Ceologyne ovalis*	elegans*	triumphans*	Saccolabium giganteum
Cymbidium Dayanum	purpuracea*	Rossii	Harrisonia- num*
Mastersi*	prestans*	Oncidium abortivum	Sarcanthus elegans
Cypripedium barbatum	Schilleriana	(ornithoceph- alum)	Sophronitis grandiflora
" biflorum	Masdevallia igneo	cheiroporum	coccinea
Harrisiannum	ignea	cruentum	Trichoplia tortilis
Hookeri*	oculthodes	oculthatum	Vanda tricolor*
insigne	tovarensis	incurvum*	
Lowi	Veitchii*	leucociliatum	
Schlimmi*	Maxillaria venusta	macranthum	
Dendrobium higibbum	Odontoglossum Alexandre bictonense	nubigenum	
		obryzatum	
		ornithorhyn- chum album	

—W. T. P.

DISA GRANDIFLORA.

THIS is one of the most beautiful terrestrial Orchids we have in cultivation, and yet it is extremely rare to meet with a plant in good or even presentable condition. Its season of growth is during our winter—a period of the year when most gardeners dislike thoroughly soaking a plant with water. Now the plant in question will grow vigorously in a minimum winter temperature of 40°, but it must be well supplied with water, and syringed overhead at least once daily. It grows well in peat, with the addition of a little coarse river sand, and I have seen it grow vigorously in a compost of fibrous loam, peat, and sand; but the pan in which the plant is grown must be thoroughly well-drained, or the compost will speedily become rotten. The main points in the cultivation of this plant are a cool temperature and a shady position, together with good drainage and a free use of the watering-pot. At the Cape of Good Hope—its native habitat—it is found by the margin of a stream on the Table Mountain, moisture being abundant, and the plants are shaded from the scorching sun which prevails at the period of its flowering by the surrounding and overhanging vegetation, through which the flowers only are exposed. A short time ago I saw half-a-dozen large pans of this plant in the grand collection of Orchids at Fernhurst belonging to E. Salt, Esq., and they were perfect examples of healthy vigour, having been grown in a low span-roofed house, along with Odontoglossums and Masdevallias, which, together with some twelve or fourteen fine plants of *Oncidium macranthum*, had been grown in a mean winter temperature of 45°.

B.

NOTES AND QUESTIONS ON THE INDOOR GARDEN.

Impatiens Hookeri.—This is a choice winter-flowering species, belonging to a somewhat neglected genus. It bears a profusion of pure white flowers, which are well adapted for bridal bouquets. The flowers are borne in succession on the growing shoots for a considerable period, and in shape remind one of the curious though seldom-to-be-seen *Utricularias*.—F. W. B.

Lisianthus Russellianus.—With the beauty of this fine but much-neglected plant all of us are acquainted; but since the days of Cuthill & Green who has seen it in good condition? Seeds of it sown early last March on the surface of the soil, and covered with a flat piece of glass, germinated with me freely enough; but the plants raised from them have grown but indifferently. Will any one kindly favour me with their experience as to the best way of growing this plant so as to have it dwarf and bushy?—Z.

Packing Orchids for Importation.—What is the best way of packing and transmitting Orchids (freshly collected) from Mexico?—S. [Epipendrams, Laelias, Oncidiums, Odontoglossums, and other Mexican Orchids, should, if possible, be packed for importation to this country during the dry season of the year. When at rest they may be packed tightly in dry shavings in a common packing case, and in this manner often reach this country in excellent condition; if they are making their growth when sent away, they should be packed carefully in a glass roofed plant case, allowing the young growths as much room and light as possible. All Orchids should be shipped from abroad so as to reach this country during the summer months. The contents of many cases that would otherwise arrive in good condition frequently succumb to the rigorous winter climate of our northern latitude.—F. W. B.]

GARDEN DESIGN.

WATER AS A FOREGROUND.

To speak of water as a foreground seems to involve a *quasi* Irishism; but there is no other term which so really and perfectly denotes that portion of a picture or real scene, which is nearest to the spectator; and I will, therefore, venture to speak of the effect of water as a "foreground." A lake, large or small, as seen from the residence, produces a very different effect to a sheet of water over which the residence is seen as a comparatively distant feature in the picture. Our illustration serves to illustrate the effect of a group of buildings seen over a broad expanse of water, which imparts to it the aspect of an object much more distant than it really is. The effect is, therefore, of great value wherever the extent of the grounds is somewhat restricted. Advantage may be taken of this valuable characteristic of a water foreground in various ways. In the first place, the spectator may be conducted to the most favourable spot for viewing the residence across the water, in the course of the approach to the house from the principal entrance; in which case the sight of the water should be first perceived after a drive or walk of some little distance through a dense shrubbery; after the closely confined effect of which, the expanse of the piece of water will appear far greater than if seen from the first, and gradually arrived at. The effect of light and sky space after the confinement of a closely-shrubbed drive, is also productive of an agreeable sensation, which necessarily lends its aid to a more perfect appreciation of the scene so presented. In this manner an agreeable point of view may be obtained before the close approach of the lake. The first glimpse of the landscape should exhibit the water as forming the middle distance; and at this point some object should be devised to arrest the advance of the visitor, either by a detour in the drive or walk, seemingly caused by a plantation, or by a solidly-built summer-house, or any other artistically-conceived object, which will necessitate the resting of the eye, if but for a few seconds, on a favourable aspect of the scene, differing in some respects from that obtained close to the water's edge. The true art of home landscape making is, in short, to contrive that different standpoints for the spectator shall be formed at the most favourable spots; and, if possible, without the too evident introduction of impediments, he should be compelled to a momentary pause as he reaches these favourable positions. These "impediments" might be of very various character; for instance, a great clump of Rhododendrons, which he must go round, as he cannot go through them; a sun dial, with an inscription likely to attract notice, or a semi-rustic tazza nearly concealed by its green cascade of trailing plants, or any other suitable object will answer the purpose equally well. At the water's edge, the back of a boat-house may form an appropriate impediment, and it may be clothed with a mantle of Clematis, Ivy, and monthly Roses; while a light boat or two, rising and falling gently with the motion of the water, will never fail to be agreeable objects, and impart life and movement to the scene. These, however, should not be visible till the previous point of view is well past, an arrangement easily effected by a projecting point of shrubbery, or by an artificial mound

partially covered with low shrubs, and showing a few jutting masses of rock to account more evidently for the sudden rise in the ground. Another advantage of water as a foreground is the pleasing reflection of the residence, seen in the water at the further side of the lake. This, in a pictorial point of view, is a most fascinating feature, and one which varies in aspect continually with every passing breeze and every passing cloud; in fact, with every hour of the day. Some of the finest of those noble historical piles, the old chateaux of France, derive half their charm from the ever-varying effects of the water by which many of them are surrounded, and in which their sculptured turrets, and pointed roofs, and mullioned windows are capriciously reflected; now, in the form of a perfect, though inverted, structure, every detail of which looks even more perfect in the lake than in its reality above; and then, with a breath of wind, breaking into fragments, deep in the lake, like the scattered reflections of the *fata morgana*.

H.

Flowers for the Sick.—It would be selfish in us to cultivate flowers merely to adorn our own homes, or to gratify our own love

of the beautiful. The flowers are generous, their fragrance is not pent up in themselves, but is wafted on every tiny current of air, and is shared by every one who passes our garden; and we doubt not but many wistful eyes admire the bright colourings and desire to hold some of them in their hands as their own. It is a sad thing to be ill, and disabled from walking out. It is a great privation to be shut up in the house—a feeble, wasting invalid—when there is so much brightness out of doors, so much to fill the heart and eye with joy and happiness. We that rise early and employ ourselves with daily cares and labours can hardly sympathise with those who are unable to enjoy these privileges, which we can really never appreciate until they are lost and gone beyond our recall. And in every community there are those who highly prize the "green things of the earth," and yet are not able to enjoy them, but are forced to struggle for life with pain and sickness, day and night. To such sufferers a fragrant bunch of flowers comes like a messenger of hope and comfort from the outer world—even a simple Rose-bud or a

bunch of Pansies is fraught with a blessing, and such slight tokens of remembrance will brighten many a dark hour, and give a cheerful appearance to many a gloomy room. Far better than medicine, sometimes, are the bright, sweet flowers of our gardens to those who are denied many comforts; and even when their illness is so severe that only the physician and nurse can enter their sick room, the lovely, fragrant flowers will remind our friends that we are mindful of their sufferings, and will do all in our power to alleviate them. Dear friends, let us bestow of our abundance not only upon the sick and suffering, but also upon those who are denied such blessings.—DAISY EYEBRIGHT.

Vegetation in the Tropics.—The *Panama Star* gives a striking illustration of the vigour and rapidity of vegetation in the tropics by referring to the bushes and trees growing in the ruins of the burnt Aspinwall Hotel, at Panama. It is scarcely more than two years since this conflagration occurred, and yet there are now growing within the walls, trees at least 30 feet in height. They belong to what are called trumpet trees (*Cecropia* or *Snakewood*), and the branches are said to be crowding out of the highest doors and windows, so as to render it probable that in their further growth they will throw down the wall with which they are inter-laced.



Water Scene at Alton Towers.

ASPECTS OF VEGETATION.

NEW ZEALAND.

THIS fine and prosperous colony, which was discovered a little more than a century ago, lies about 1,200 miles S.E. of Australia, stretching from lat. 34° 15' to 47° 30' S., and between long. 166° and 179° E. It consists of three islands, which together form an area nearly as large as that of Italy. In general appearance the vegetation of New Zealand is pleasing during summer, but in winter the aspect is rather dull and monotonous. The mountain ranges in many instances are wooded from the base to near the summit, whilst the more diversified vegetation of the deep glens and ravines presents a richer and more varied appearance. In the central range of mountains are several grand peaks, the highest of which, called Ruapahu, has an elevation of 9,000 feet, and is perpetually covered with snow, whilst some of the lower peaks are active volcanoes. The country generally is well watered, the rivers which traverse the plains being fed by numerous streamlets which meander down the mountain sides, through lovely gulleys and deep glens, some idea of the appearance of which may be gleaned from our illustration, in which are depicted various tree Ferns, Cordylines, and forest trees. Indeed, from similar situations, many of the beautiful plants which adorn our greenhouses in this country are brought.

The forest trees of New Zealand are not, as a rule, remarkable for beauty when old, although several of them are handsome when young. Shrubs and smaller trees are, however, numerous and often pretty; and there is an abundance of Ferns. We have, indeed, nearly a hundred species of Ferns in cultivation from these islands. New Zealand forests are usually well varied and interesting. There are, however, some few exceptions to this, such as in the case of the Kahikatea (*Podocarpus dactyloides*), which is frequently found by itself in the form of dense woods at low elevations; another species (*P. Totara*) also grows by itself, forming small groves or copses. *Fagus fusca*, again, is a gregarious plant, growing in large forests, the peculiar feature of which is the nearly total absence of any kind of underwood, thus affording an extended view through its glades. *Kentia sapida*, the only Palm as yet detected in New Zealand, is confined to these islands, and is found at various elevations, from 200 to 1,500 feet. The Ti tree (*Cordyline australis*) is found most plentifully almost from the coast up to 3,000 feet of altitude, whilst the somewhat rare *Cordyline indivisa* is confined to mountain ranges, at elevations of from 2,500 feet to 3,500 feet. It is called the mountain Ti, and from its handsome broad leaves are made strong, warm mats, which are called by the natives Toi, and when dyed black are held in great estimation by them. The two beautiful species of *Libocedrus*, viz., *Doniana* and *Bidwillii*, are only found at an altitude of from 200 feet to 2,000 feet, one forming dense thickets on the Ruahine Mountains, the other in the Bay of Islands district.

The lovely Ferns, *Todea superba* and *T. pellucida*, are found at various altitudes between 2,000 feet and 3,000 feet; many times have I heard it said that these are but one and the same species; but, whether that be so or not, under cultivation they are sufficiently distinct to warrant their having different names. *Loxsonia Cunninghamii* is another fern peculiar to New Zealand, and which was for a long time considered extremely local, there being only one spot in which it was known to be found, viz., the Kerikeri Waterfall, in the Bay of Islands; more recently, however, it has been discovered in the Coromandel Mountains, and I have a specimen of it from Whangarei. I shall be glad to see this peculiar and beautiful Fern common in our collections. Another very curious Fern, *Schizoclea dichotoma*, as far as I can ascertain, is only found in the gigantic *Dammara* forests.

Cyathea medullaris and *C. dealbata* are found in some places very plentifully at various elevations, from 200 feet to 2,000 feet. *Dicksonia squarrosa*, on the other hand, does not appear to have such an extensive range, being mostly confined to elevations of from 500 feet to 1,500, in which also the graceful *Cyathea Smithii* and *Alsophila Colensoi* mostly abound; the latter species, by some curious mischance, has not (as far as I am aware) yet reached this country in a living state. *Cyathea Cunninghamii* is another tree form peculiar

to New Zealand, of which but one or two large examples at present exist in our collections. This, with two other species of *Dicksonia*—*lanata* and *fibrosa*—include all the tree Ferns in New Zealand as far as we at present know. I may add that the last-named plant is considered by some to be identical with the Australian *D. antarctica*, but the specimens in cultivation induce me to believe that they are thoroughly distinct. New Zealand also possesses abundance of beautiful *Hymenophyllums* and *Trichomanes*, some of which are peculiar to those islands, whilst curiously enough our native species, *H. tunbridgense*, is to be found amongst them.

Phormium tenax, *P. Colensoi*, and the many various forms of New Zealand Flax, with which the islands abound, are found in all sorts of situations, irrespective of soil, from the coast line up to about 3,000 feet elevation.

We must pass over the various beauties of the New Zealand flora, as represented by such genera as *Veronica*, *Eugenia*, *Clanthus*, *Metrosideros*, *Knightia*, *Epacris*, *Drosera*, *Dracophyllum*, *Chrysobactron*, *Coprosma*, *Fuchsia*, *Clematis*, &c., and take a glance at a few of the large timber trees, selecting first the most gigantic, viz., the Kauri (*Dammara australis*). This splendid tree attains a height of about 150 feet, and is some 8 feet in diameter at the base. This does not form forests by itself exclusively, but grows up amongst other trees, all of which it overtops. The value of the timber of this tree, which is often branchless for a distance of 50 or 60 feet, is very great, the wood, though apt to shrink, being convertible to many useful purposes. The *Kahikatea* (*Podocarpus dactyloides*) forms a beautiful object when growing singly; it is, however, gregarious and forms dense forests. It grows from 90 to 100 feet high, and always in low wet situations. Its timber is easily worked and is handsome, but like that of the Kauri it is liable to contract and expand with changes of weather. *Podocarpus spicata* (the Matai) is another fine timber tree that grows about 60 feet or more in height; its wood is hard and the plant is not gregarious. *Dacrydium cupressinum*, the Rimu, is a truly charming and elegant plant, its long drooping slender branches giving it a most graceful appearance. It grows singly or in small groups, attaining a height of about 60 feet, and producing handsome durable wood, which is largely used for furniture making. Of other timber-producing trees there are the *Metrosideros tomentosa*, *Vitex littoralis*, *Phyllocladus trichomanoides*, *Fagus Solandra*, *F. fusca*, *Podocarpus ferruginea*, *Dysoxylum spectabile*, *Santalum Cunninghamii*, *Elæocarpus dentatus*, *Libocedrus Doniana*, &c. Great quantities of medicinal and economic plants are also indigenous to New Zealand.—G.

Australian Products.—It is interesting to learn that the efforts which have been made lately to increase the commercial products of Australia have been successful. Two of the colonies—Victoria and Queensland—are now able to bring into the market an appreciable quantity of native-grown sugar, extracted in the one instance from beet-root and in the other from the sugar cane. There appears, also, to be little doubt that almost every semi-tropical plant may be cultivated in some part of the province of Queensland. The coffee plant already covers several acres in the neighbourhood of Townsville, and as the tea shrub grows luxuriantly in the Botanical Gardens at Brisbane, there is no reason why it should not be cultivated generally and with a view to trade in other districts in the same latitude. The colonists themselves are looking forward to a time when rice and indigo will rank among the chief products of Australia.

The Distance Walked by a Gardener.—According to a local contemporary, some man of figures has taken the trouble to compute the extraordinary distance walked by Mr. William Wheeler, a gardener, of Brading, who has worked at Westridge, Ryde, for a period of fifty-one years, three months and seven days, and has during the present month left his employment. The distance from his home to Westridge is six miles, and for the period above mentioned he has walked there and back daily (with the exception of two days' holiday yearly, and a month's absence through sickness). This gives a total of 92,640 miles. Taking the circumference of the globe at 25,020 miles, it would appear that he has walked a distance of four times the circumference of the globe (except 4,440 miles) in going to and from his work. But if only one mile a day is allowed for his walking about the garden, &c., then his pedestrian feat would be increased by 15,928 miles, making a total of 108,568, or four times the earth's circumference, with 11,488 miles to spare.

NEW ZEALAND VEGETATION.



THE GARDENS OF THE ANCIENT ROMANS.

VERY little has been placed upon record as to the composition and the physiognomy of the Roman gardens, though it is certain that during the uprise of the Roman power, when the people subsisted chiefly upon vegetable food, every house and every family owned its allowance of ground, and hence we find in the "Laws of the Twelve Tables," established about 450 years B.C., that the words *hortus* and *heredium*, or garden and inheritance, were equivalents. The first Roman garden of which actual mention is made was that of Tarquinius Superbus, planted or enclosed about five and a half centuries B.C. For a long period subsequent to this, or during the unvitiated Roman times, gardening was an art so honourable, that many families, afterwards renowned, received or adopted their patronymics from the names of the plants for which their gardens were famous. Hence arose Piso from *pisum*, the Pea; Fabius from *faba*, the Bean; and Lentulus from *lens*, the Lentil; while the *lactucini* received their surname from the Lettuce. These early gardens were of course devoted chiefly to culinary or food plants, and to fruit trees; embellishment with objects having no immediate economic value would arise only with the growth of taste and the acquisition of wealth. Even when luxury and riches excited the inordinate passion for ornament so general with the Roman people, a little garden still held its place in the front of every house, where not prohibited by the demands of building or the City Surveyors. It is interesting to find that when, from the pressure of circumstances, town gardening became impracticable, the employment of flower-pots, like those in use to-day, was a common practice, the places assigned to them being, as with ourselves, steps, balconies, and window-sills. Corrupt as the taste of the later Romans became in so much that involved a moral element, it is refreshing to see them retaining a certain love of nature. The rural spirit of their ancestry seems never to have been entirely caucelled by the grandeurs of the artificial city-life. They constantly exhibit a keen desire for that refined species of gratification which consists in the enjoyment of the country within the precincts of the town; the poets also declare again and again that they hold a genuine and lively relish for the delights of an existence where the excitement of public life would not interrupt tranquillity. There is much less indication of this yearning for the sequestered repose of the country in the writings of the Greeks.

The relish for the calm delight
Of verdant fields and fountains bright,

seems to have been far less active with the latter nation, a circumstance explained, perhaps, by the early Greeks having been much more of a seafaring people, instead of, like the early Italian races, given to pastoral pursuits. "It is thus," says an accomplished critic, "that even in their highest stage of refinement, the manners and feelings of nations bear some affinity to their original rudeness, though that rudeness itself has been imperceptibly converted into a source of elegance and ornament." That flower-pots were employed in the way mentioned, appears from one of the epigrams of Martial, a poet whose compositions were produced about sixty years after the commencement of the Christian era, or during the reign of the Emperor Domitian.

Donasti, Lupe, rus sub urbe nobis;
Sed rus est mihi majus in fenestra! —(xi. 19.)

Let us not forget that the Roman countryfolks gave to the garden the apt metaphorical name of "the dessert," and that if the garden presented an air of disorder, it was judged that there was a bad housewife, seeing that the neatness of this part of the establishment was always assigned to her charge. *Indiligens hortus* was tantamount to *indiligenter cultus*, and this was understood as referring to the feminine head of the household. It may generally be taken to signify much the same thing in this current year of grace, 1872, for, given a tidy garden, it will usually prove that a woman's eyes rest on it daily.

Virgil, though he deals so copiously with agriculture and bee-keeping, entirely passes over the subject of gardens and floriculture. That he contemplated dealing with it in some future poem, may be inferred, perhaps, from the celebrated

passage in the 4th Georgic, beginning at line 116:—"And now, were I not just furling my sails with the close of my labours, and hastening to turn my prow towards land, perhaps I might sing how rich gardens should be adorned; what treatment is needed for the rosaries of Pæstum, where flowers come twice a year; how Endive and green banks of Parsley delight in drinking the rills; and how the Cucumber, winding through the grass, swells in round juiciness. I might sing, too, and forget not, of the Snowflake, and the flexile broom, and of the Ivy, with its creamy foliage; and of the Myrtles, that love the shore." "Do not I remember that old Corycian," he continues, "who, amid his Vervain and white Lilies, found happiness of mind that was equal to the wealth of kings? Ah! yes, the first was he to gather the Rose of spring, and the fruit of autumn; and even when sad winter split the rocks with cold, and bridled the current of the streams with ice, in that very season was he cropping the locks of the soft Acanthus. He had Lime trees (for the bees) and Stone Pines in great abundance, and as many fruits as the liberal tree had given promise of in early blossom, so many did it retain in the time of ripeness!" What could be more charming in its simplicity? What more regretful than the poet's silence? The passage, unhappily, and the unfulfilled design, are neither of them unique in literature; they belong to a fashion of the world that never dies, and that as certainly began not either with Virgil, or with him

Who left half-told,
The story of Cambuscan bold.

Virgil may have introduced this exquisite picture with the simple design of seeming to be led into it insensibly. If so, it is one more proof of his consummate art, a conclusion almost justified by the suddenness with which, as if he had lost, and then recovered himself, he stops in his description, and exclaims, "But these I must leave on one side, restrained by the narrow bounds I have prescribed myself, leaving them to others to record." Good gardening and the true spirit of poetry always run hand-in-hand, like Helena and Hermia in the "Midsummer Night's Dream,"—

"Both warbling of one song, both in one key,"

and from this little display of Virgil's art we may gather how delightful, after the same manner, are unexpected fragments of the picturesque, perfect, nevertheless, in themselves, when skilfully thrown in, so that while the general effect and impression of the garden-beauty are unimpaired, there is a delicate pause, and a sweet sense of variety, from which we gather new enthusiasm. Even a solitary plant or flower, no matter how common, ingeniously placed, will do more for a garden than a thousand *Calceolarias* side by side; look, for example, at that silvered *Oleaster* by the water.

LEO GRINDON.

GARDEN ACROSTIC (DOUBLE) No. 1.

THE snows descending cover me,
Returning suns uncover me,
And botanists discover me.

1. England permits it—so the Czar,
May launch on me his ships of war.
2. A British seaport on the west
I have a roadstead of the best.
3. No little merit is my due
With leving art I tamed a shrew.
4. An institution of this age
Of Yankee origin, and now "the rage."
5. I was moving around ere the earth was begun,
And the doggie got me instead of a bone.
6. Who tries to make this riddle out
Will make me thrice, at least, no doubt.

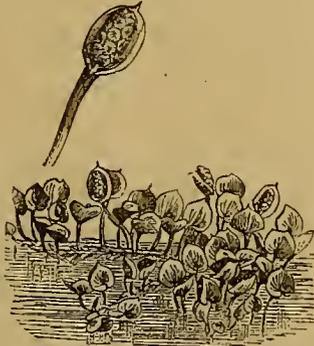
—SALMONICEFS.

IN many of the lakes of Northern Minnesota, and in the marshes at the head-waters of the Mississippi, there are extensive beds of wild rice. The Indians have long been in the habit of gathering it for use as food; taking their canoes into the rice-swamps when the grain was ripe, and beating it out with their paddles until the canoes were loaded.

THE FLOWER GARDEN.

CALLA PALUSTRIS.

THIS curious semi-aquatic or bog plant is an exceedingly ornamental subject for the margins of ponds, lakes, and streams. From a long, trailing, fleshy stem it sends up numerous handsome heart-shaped leaves, which stand erect, from 3 to 8 inches high. It flowers in summer, when it presents a very singular and interesting appearance, the interior of the spathe which accompanies each spadix of flowers being of a pure silvery white, and contrasting finely



Calla palustris.

with the deep green of the foliage. It is easy of cultivation, as it will grow in any soft mud, and may be increased at pleasure by division of the long creeping stem or root-stock.

ROSES IN SUBURBAN GARDENS.

THE Manetti as a stock for dwarf Roses has been undervalued by some and overrated by others; but there is no doubt that its introduction has given an impetus to the more rapid distribution of the better kinds of Roses. It is a stock that is easily propagated, comes quickly into use, and nearly all Roses take freely and well upon it, and if a little soil is removed from the collar and the bud inserted low down, it will "work" well in the driest seasons. It does not produce fibres like the Briar, but sends its roots deep down into the earth, and it is on this deep strong rooting tendency that its chief value depends; for on light hot soils, where the Briar will scarcely live, the Manetti will flourish if liberally treated. The ground for it must, however, be deeply trenched 2 feet or more, and plenty of decomposed manure from the cowshed or pigsty must be added to it, and in planting the stock must be buried completely. True the Manetti sometimes, like the Briar, throws up suckers in a troublesome manner; but this has generally been caused by neglect in the first instance, in not cutting away cleanly all buds below the ground level at planting time. Whenever I have had any trouble with plants throwing up suckers to any extent, I have always found that the best treatment is to take them up, to trench the beds over, putting in at the same time a good dressing of manure, to prune the roots a little, cutting away cleanly all suckers and all appearance of latent buds below ground, and then to replant. I am of opinion that all Roses are the better for being subjected to this treatment every three or four years.

Some years ago I had some experience in growing Roses in the suburb of a smoky city. I had also many opportunities of watching the efforts of others in the same direction, and I found, as others have found, that the great difficulty in town gardens is the smoke nuisance. All other difficulties can be met and overcome, and even in the vitiated atmosphere of a town, Roses can be grown with a fair amount of success if the necessary pains are taken with them. And if I might presume to offer a few words of advice to beginners, I should say, grow none but the most vigorous kinds. Aim rather at a selection than a collection. If the soil is light and hot, have them on the Manetti. If a fair Rose soil, such as a stiff loam, try them on the briar. The most useful instrument in the hands of a city amateur is the syringe, or some small form of garden engine. Armed with this in the evening, and a supply of clean water that has previously stood in the sun for several hours, he may bid defiance to insects, and dislodge deposits of soot from his favourites at the same time. This, together with mulching and an occasional spoonful

of some concentrated manure sprinkled on the surface and watered in, will add much to his chances of success. Cocoa-nut refuse is a good and clean mulching material, and there are few things that are not benefited by its application. A mistake too frequently made in reference to town gardening is aiming at too much at the commencement, and too freely imbibing the notion that when a plant or tree is once planted it will flourish without any further care. I have said nothing about Roses on their own roots, but the majority of Roses budded on the Manetti, if planted deeply enough, will ultimately strike root above the union, and will consequently have the benefit of two sets of roots. E. HOBDAV.

Formal and Picturesque Gardens.—As my name has been more than once mentioned in your discussion on this subject, will you allow me to say that I think the discussion of very little practical use. It surely must be left to each person's own taste to select his own style of gardening, and it is worse than useless to attempt to dogmatise on the subject, and to say that either the one style or the other is contrary to all principles of good taste. I think it very probable that Mr. Peach's garden would not much interest me, and quite certain that mine would not interest him; but I think we may both go on working in our own ways, and so we shall be more likely to please ourselves and to give pleasure to others.—HENRY N. ELLACOMBE, *Bitton Vicarage*.

Schizostylis coccinea.—November 26, a cold, biting, drizzly, rainy day, gardens dreary and desolate. Still "like the pale embers of a dying fire," there are bits of colour here and there, just enough to warm the heart and keep it from being wholly frozen. "Hot Pokers" (*Tritoma Uvaria*) amid the hail and sleet and snow appear red hot still; and even brighter than the "Poker plant" is a plant, or I should say a row of plants in full bloom at the moment I write, and to all appearance likely to continue so for a month at least, viz., *Schizostylis coccinea*, a *Gladiolus*-looking plant, with spikes of deep red flowers. Though it is not often seen, every garden should possess this beautiful winter flower, which will grow anywhere, and which in its manner of growth partakes somewhat of the tuberous Iris. Every spring the roots should be lifted and sorted, the stronger ones should be divested of all offsets and planted at once where they are to bloom, the rest should be left for stock.—THOS. WILLIAMS, *Bath Lodge, Ormskirk*.

The Best Twenty Roses.—Will you kindly name the best twenty Roses, exclusive of Tea Roses?—F. L. [Charles Lefebvre, Alfred Colomb, Madame Rothschild, John Hopper, La France, Marie Baumann, Marquise de Castellane, Sénéteur Vaisse, Pierre Notting, Duke of Edinburgh, Louis Van Houtte, Mdlle. Eugénie Verdier, Madame Victor Verdier, Mdlle. Marie Raby, Marguerite de St. Amand, Edward Morren, Xavier Olibo, Dr. Andry, Victor Verdier, Exposition de Bric.]

MY TWO GARDENS.

I HAVE a garden plot, so fair and sweet,
'Tis my delight to tend and keep it neat:
There do I labour 'mid my treasured flowers,
There spend in pleasant toil my leisure hours.

If there a weed or noisome plant I see,
'Tis rooted up or cut down instantly,
No bind-weed round my flowers shall ever twine,
No blight shall hurt the Roses that are mine.

* * * * *

There was another garden given to me,
Equally fair and fruitful can it be,
To watch and tend it is my needful part;
I mean the garden of my own frail heart.

I need watch over it every day and hour,
Suppress each weed and cultivate each flower;
By labour and by care at length to raise,
A lovely garland formed of prayer and praise.

But ah! this garden all attention needs
So vile and poisonous are its deep-set weeds,
And yet so sweet and seemingly so fair,
I oft mistake the weeds for flow'rets there.

There clings foul Pride fair Charity to choke,
Hypocrisy will sweet Religion cloak,
And hard indeed, and difficult to move,
Are the vile weeds that mar and hamper Love.

* * * * *

Oh that I could these evil weeds suppress,
And make my garden rich in loveliness,
All meet for Him who when 'tis all done well
Shall in my garden deign Himself to dwell.

E. M. L., in *People's Magazine*.

THE FRUIT GARDEN.

THE VINE IN THE OPEN AIR.

(Continued from p. 524.)

ADDITIONAL AIDS TO GRAPE CULTURE IN THE OPEN AIR.

Ground Vineries and other portable glass protectors will ripen Grapes well in favourable situations in different districts without any help from fire heat. Choose for this mode of culture a dry border with a southern aspect. Ground Vineries consisted originally of small span-roofed portable frames, 7 feet long, 2 feet 6 inches wide at base, and 1 foot 3 inches high to the centre of the span. Each length was glazed in the usual manner with four squares of glass on each side, 20 inches square. A trench, 2 feet wide at top, and sloping in on either side to 6 inches at the bottom, at a depth of 15 or 18 inches, was then dug out and the sides and bottom made smooth, the bottom being paved with bricks and the sides lined with slate to radiate heat. Along the edge of the vinery thus formed a row of bricks was laid end to end, leaving interstices of 2 inches between each. These openings were the permanent ventilators which were left open night and day for air. On these bricks the frames were set, as many as were wanted, end to end, and the two outer ends were closed in with wood. A single Vine sufficient for a length was led in through a hole in the end, or one Vine was allowed to furnish two or three vineries on the extension system. The Vines were mostly planted outside the vineries, and an area 6 feet square and 2 feet deep was provided for the roots of each Vine, this space being enriched with rotten manure and inch bones. The Vines were supported and kept in proper position by iron rods laid across from bank to bank at intervals of 2 feet or so apart, and the glass was never removed except for pruning, thinning, and harvesting. Under such circumstances the Vines needed but little care and kept remarkably healthy, all the fruit ripening well in ordinary seasons. Some varieties, as the Trentham Black, that are at times somewhat sly in ordinary vineries, have been known to produce heavy crops in ground vineries, while Esperione, Sweetwaters, Muscadines, and others did as well or better in ground vineries than in houses of any description. Of course the plants must be close spurred when confined within such narrow bounds. Ground vineries are, however, now made of any width and depth. The primitive type has already developed into various sub-classes, the barless ground vinery being among the first improvements on the original. This is simply a skeleton frame 7 or 10 feet long with two ends. It is 30 inches or 3 feet wide at the bottom, and from 12 to 24 inches high. It is filled in with glass squares hutting against each other sideways, and kept in position by being slipped into a groove at bottom and a slip of wood screwed over their upper end. They are more simple and equally as efficient as those of the original form. Perforated bricks have also been used in lieu of common ones for ground vineries. These have several advantages. The smaller openings create less draught, and are to a great extent vermin proof. The interstices between the bricks were the weakest features of the primitive ground vineries. The wind passed through them with such keenness and force as often to make the inside colder than the general atmosphere outside, and rats and mice and small birds delighted to hop out and in through the 2-inch spaces between the ends of the bricks. Even perforated bricks are hardly necessary on both sides. If they are used along the back only, or if one or both ends are left open according to the direction and force of the wind, efficient ventilation will be provided. It seems a grievous waste of heat to enclose an area with glass to make it warm and then pigeon-hole the wall on both sides to drive the heat out again. In sunny sheltered situations, such as the southern slope on which the ground vineries stand at Sawbridgworth, this draught-creating arrangement is of less moment. But even there the Grapes would ripen earlier and better with but one row of ventilating spaces. And in less favoured localities both sides would be better closed and the needful air admitted by the ends or through the roof. All that is required for a ground vinery is the bricks for the sides and the glass roof. The vineries are made of any width or depth from 9 to 30 inches, only using span-roofs to double their widths or more, as the cultivator wishes. A few more common bricks for the sides obviates the necessity of excavating the earth, so that the Vines may be planted in prepared borders and the roots and tops be both enclosed. By using a compound brick (Rendle's patent grooved) for the coping of the back wall, any or every square of the roof may be removed with the utmost facility for ventilation. Grapes do remarkably well in ground Vineries, and even Muscat of Alexandria have been ripened in one with the two ends open all the season and no other ventilation given. Our ground vineries have become greatly improved, but probably, after all, no ground vinery can beat a common garden frame set over ground cordon Vines. With a warm

site and skilful management most of our best Grapes might be ripened thus. The utility of walls was seen and acknowledged from the beginning, and attempts were early made, as we have seen, to heat and cover them. Glass screens are anything but modern inventions. Old cultivators ripened choice Grapes on walls by enclosing single bunches or whole shoots under primitive cloches, hand-lights, and wooden boxes with glass lids. The lights of common frames and pits were likewise hoisted up against walls to help and heighten as well as hurry maturity. We wish to see Vine cultivation in the open air proceed simultaneously with the multiplication of vineries under glass. Mechanical inventions are doing more to help Vine culture in the open air every day; portable heat preservers are growing in numbers and efficiency. Glazing is no longer a skilled art; glass coping-screens on walls are offered by the mile. Everywhere the possessors of gardens are being fired with a noble intention to eat Grapes of their own growing, and every day it is becoming easier to grow them. Glass walls, for instance, double the area of our most genial aspects at once. Instead of absorbing the light and heat of the sun, these send it through to the colder and darker side, thus making both alike warm as near as may be. Grapes grow well upon these. Single walls are good, but groups are better; by increasing and grouping them near to each other we gain a cumulative effect. The walls reflect the heat to each other again and again, and the result is a wall atmosphere ranging from two to five degrees above that of brick walls. These walls may be packed much closer than brick-walls, from 2 to 3 feet being a useful distance. They throw no shadow, or next to none, and should be so disposed as to admit all the light and heat possible. It would be easy to roof glass gardens in with canvas, or even portable glass, for a few weeks, in ungenial springs or sunless autumns, but, apart from this, the glass alone would suffice to ripen Grapes in favourable localities. Such walls occupy little space, need no elaborate foundation, continue the property of the tenant, and allow the roots free scope to search out and remain in the richest, warmest, and best feeding grounds. With such handy aids to the culture of Vines in the open air, English vineyards of the future will assuredly excel those of the past.

PRUNING.

I may add to what has already been said on this subject, that on the true Vineyard system, the Vine rods fruit but once. To each stool from three to six rods are left to bear fruit every year. When the latter is ripe, the rods are cut to the ground, and during the summer as many young rods will have been led up to succeed them. Of course the general cutting back or pruning ensures an annual crop of shoots, and two crops are always advancing together, the fruiting canes and the young wood. This is the most elementary form of Vine pruning. It is simply an annual wood cutting. All pruning consists more or less of this character, but it is seldom quite so easy to determine the where to cut and to what extent. But supposing an old Vine is left to fruit a second or any number of years, it follows that the side shoots must be cut back to the main stem; else would the Vine travel so far as speedily to become unmanageable, and fruit so freely as to exhaust itself. Hence originated the necessity of spur pruning, and the different varieties and names of it simply arose from the length of the side shoot left. Some cut home, that is, they take the shoot clean off, and that is what is termed close spurring. Others leave one, two, three, or more eyes, and that is long spurring. Others again cut to the best bud, no matter where it is situated, and they get so far away from the main stem that the so-called spur becomes more like a deer's antler than a spur. Most of the long spurrers adopt certain expedients for getting home again, as it is called. Some remove every other spur, and convert the close spurs of one season into wood for fruiting the next year. At the winter pruning the fruit-bearing spurs are cut clean off; and then no spurs, long or short, fruit but once. More, however, cut close for a series of years, and with large Vines on walls or on roofs of houses and outbuildings there is no mode of pruning equal for regularity and evenness of produce to moderately-close spurring. It is also most suitable for ground cordons. These may be from 6 to 12 feet in length, about a foot from the ground, and from 30 inches to 3 feet apart. The leaves become smaller on the close spurring system of pruning than on the long, which is a great advantage for cordons, as more sun-heat gets through to warm the ground. The bunches and berries will likewise be moderate in size, but no mode of pruning will yield a heavier aggregate crop nor fruit of more equal quality than close spurring.

CHASSELAS.

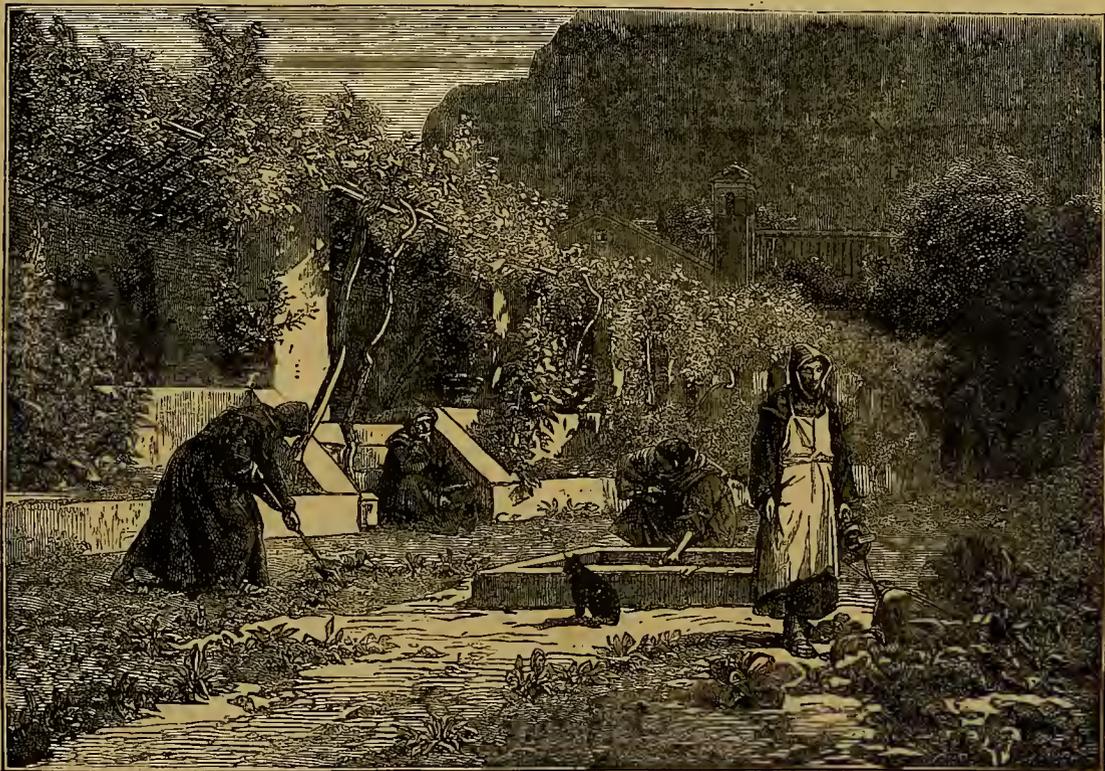
Quality of Pears.—I have this day carefully tested six varieties of Pears, consisting of Passe Colmar, Beurré Rance, Glou Morcean, Easter Beurré, Beurré Diel, and Beurré Bosc. Of these, all but Passe Colmar were not up to fruit of former years in the way of flavour, and why Passe Colmar should be so I cannot understand.—R. GILBERT.

MONASTIC GARDENS.

IN the present day, when the art of gardening has attained to such excellence, that we can hardly realise it ourselves, we must not forget how much we are indebted to the horticultural perseverance of the patient monks of the mediæval period. When the crash of the great Roman empire was impending, in the fourth and fifth centuries of the Christian era, bands of Christian men sought a refuge from the corruptious and vices of falling Rome in mountains and deserts, whither they carried more or less of the agricultural and horticultural knowledge that Roman art had carried to a high degree of perfection. In their distant retreats they had often no other means of subsistence than such fruits of the earth as their own labour enabled them to raise, or the milk of a few mountain goats.

Beyond their religious observances, and the hours devoted to that meditation for the indulgence of which they had sought the quiet of utter solitude—the whole of their time was devoted to the tillage of a few corn-fields, and the culture of their garden. The soil of the mountain, or that of the desert plain,

nearly extinguished. Along with the arts of the sculptor, the architect, the painter, and the poet, that of horticulture suffered a like eclipse; and but for the small reserves of the art, such as it was, in the hands of the monks, and in the eastern capital of Rome, Constantinople, the eclipse, not only of horticulture, but of general civilisation, might have endured for an indefinite period, and many more branches of knowledge, as some few undoubtedly have, might have been irretrievably lost. But while the savage conquerors were revelling in the destruction of beautiful cities along with their schools and libraries, and devouring the luxuriant crops of the richly-cultivated fields and making no preparations for raising new ones, but allowing whole districts to relapse into wildness; while this general destruction was going on, the monks, in the fastnesses of their desert and mountain homes, too poor and too distant to tempt the greedy Goth or riotous Hun, were plodding on, undisturbed in their solitude, writing their homilies and chronicles, illuminating and multiplying their copies of the Gospels, and, above all, taking care of their



A Monastic Garden.

in which they had sought their life-long retirement, was often so scanty and unfruitful that the task they had imposed upon themselves of supplying their wants entirely by their own labour was in many cases an extremely difficult one; and the raising of a sufficiency of food from land which was almost always extremely bare and barren, taxed their perseverance and skill to the highest degree; but to men starting with a certain amount of knowledge and skill, these difficulties served to stimulate exertions which were generally successful, on account of the untiring perseverance and industry of these gardeners of the mountain and the desert, and they may be said to have made the earth smile in utterly bare places with those useful fruits which sustain the life of man, and even with the flowers which embellish it.

Thus, when towards the middle and close of the fifth century the vast hordes of northern barbarians swept over the fair and highly-cultivated lands of France, and Spain, and Greece, and Italy as a victorious, and, at the same time, a devastating torrent of barbarism, the ancient arts of civilisation were

seed-corn, tilling their unwilling scraps of field for sowing it, and keeping their monastic gardens well filled with an abundance of good succulent vegetables, and, as I have said, even with flowers, by means of arts, which among the ordinary habitations of men and their more accessible woods and fields, were being trodden out of existence by the ruthless heel of barbarism.

There can be no doubt that many kinds of culinary vegetables developed by the skill of Roman gardeners have thus been irretrievably lost, as well as many exquisite varieties of garden flowers; but the monks assisted very potently in preserving many valuable fragments of the results of Roman gardening—fragments which subsequently served to re-establish horticulture upon a new basis; which, though much ancient knowledge, priceless in its kind, was lost for ever, yet served to supply its place by new ideas, and new processes, founded upon the fragments of those which had been lost.

Our illustration is from one of the clever and thoroughly artistic drawings brought back from his Italian tour by

Alfred de Curzon. It has all the merits and some of the defects of modern French art. The striking realism, combined artistic elegance, and the clever manner in which absolute truth, or the close semblance of truth, is observed in most of the details, the whole is, seemingly without effort, made to form a composition in which the best rules of art are observed. It should be especially noted that while the garden and landscape features of the composition belong to the highest class of landscape art, the figures are each of them a study of characteristic portraiture, while in English pictures of the same class, the figures are mere dummies, introduced as mere touches of colour. The monk who forms the pivot of the whole composition of M. de Curzon, and whose white gardening apron and dark serge gown contrast so strikingly, is a most admirably characteristic figure. The ascetic and contemplative face wears an expression of wandering thoughts; while the hands are mechanically performing the garden duties with which he is occupied. The older brother, who sits on the steps leading to the ambulatory beneath the Vines, is equally characteristic, as is the brother who is digging; and also the one filling his watering can at the tank, and the more shadowy figures, reading as they pace slowly along their Vine-roofed cloister. The whole picture vividly represents the habits of monastic life, in which the cultivation of the garden is made to form a leading feature. On mountain steeps or sandy plains, the supply of water is always the chief difficulty to be overcome, and in this composition the tanks are justly made prominent features. In mountain farms in Switzerland and Italy I have often seen water conveyed for miles by means of narrow wooden troughs made of hollowed Pine trunks, frequently not more than a few inches in diameter—rickety but economical aqueducts, which, nevertheless, are known to endure for several generations. Such or similar methods were necessarily resorted to for the supply of water to the gardens of remote convents, where, from the necessities of the site, artificial watering was almost continuously necessary, as illustrated in our picture, which represents a well-known mountain convent in the Apennines, among the barren regions above Tivoli.

Such monastic gardens as the one pictured by Curzon have not changed their aspect for ages; and there are hundreds of such pictures, quaintly limned, among the illuminations of the manuscripts of the thirteenth, fourteenth, and fifteenth centuries, which fully bear out the general truthfulness of the picturesque composition which the French artist has founded on the garden of the Tivolese convent. I could point out a score of such monkish gardens within a circuit of twenty miles round Rome or Naples, which are still much the same in form and culture as they were in the middle of the fifteenth century. One especially I call to mind, at Rome, in the garden of the convent of the Capucini, at the back of Santa Maria del Popola. In the decorative portions of that old-world garden, there was, when I saw it, a perfect wilderness of grand old-fashioned flowers blooming luxuriantly in formal compartments, fenced in with borderings of a somewhat ghostly character, which doubtless served, perhaps intentionally, to remind the good monks, rosy and well fed as they were, that the good and beautiful things of this world are of a transitory nature; one of the borderings in question was composed of pretty pointed-arch work, formed of the ribs of long-departed brethren of the order, and another, a very capital pattern, was constructed with the blade-bones of holy monks of the past. These and many other features often found in monastic gardening are certainly not models to imitate; but, nevertheless, those monks and their gardens have served as the invaluable links by which the antique horticulture of Greece and Rome has been linked to that of modern times.

H. N. H.

The *Scientific American* has recently given a statement relative to the extreme summer temperature of different parts of the world. Thibet is stated to be the hottest country in summer, its temperature in the shade rising to 150°. In Senegal and in Guadalupe the summer temperature is said often to reach 130°. Throughout the delta of the Ganges the mercury rises to 120°. These are the highest temperatures given, the European mean summer temperatures varying from 70° to 90°, Iceland recording its midsummer heat at 45°, and Nova Zembla at 34°.

THE KITCHEN GARDEN.

PARIS MARKET VEGETABLES AND THEIR CULTURE.

BY A PARIS MARKET GARDENER.

(Continued from p. 512.)

THE CARROT.

The kind most generally cultivated about Paris is a short and almost round variety, which is grown in frames. When intended for an early spring crop, the seed is sown in the preceding November. Beds for Carrots are made of from 20 inches to 2 feet deep of mixed manure, on which frames are placed. From thirty to thirty-six Lettuces may be planted among them in each frame. The lights need not be covered with mats except during severe frosts. No air is admitted until the Lettuces are fit to gather in January. After the Lettuces are removed, air may be given when required, and the lights covered in frosty weather. The crop of Carrots is gathered at the end of March or the beginning of April. Carrots are sown every month in hot-beds, under frames or cloches, until the beginning of March. Some Spinach seed may also be sown along with them, a crop from which will come in after the Lettuces. Radishes are likewise often sown with them; but these are not always a profitable crop when sown in this way, as they like air, which is injurious to the Lettuces; so that if Radishes are sown it is better not to plant any Lettuces in the same frame. In April the frames are all removed from the Carrot beds, as they are then required for Melons. Before removing them, the Carrots should be gradually hardened off, by frequently giving them air. If the weather becomes cold after the frames are taken away, straw mats are laid over the beds. These are supported on strings fastened to pegs or stakes driven into the soil at the corners of the beds, so that the leaves of the plants may not be broken by them. When Carrots are sown under cloches, three black Lettuce plants and one of Roman Lettuce are planted among them under each cloche; or, instead of the Lettuces, Radishes may be sown, and Roman Lettuces planted between the cloches; Those under the cloches grow faster than those outside, and are gathered first; the cloche is then placed over one of the outside plants. Carrots are also sown in the open air along with Radishes, and the beds are covered in frosty weather with straw mats supported by a low trellis. They are also sown in the open ground, in cold beds under frames and cloches, in the beginning of January; if sown earlier they would run to seed. Thirty plants of George or Gotte Lettuce, or twenty of Roman, may be planted among them in each frame. If sown under cloches, it should be on a good layer of thoroughly-rotted manure, and three Roman or Cabbage Lettuces may be planted among them under each cloche. In February, Carrots are sown on sunny borders, along with Radishes and Roman or Cabbage Lettuce. Monthly sowings continue to be made up to the 15th of July, in combination with Radishes, Spinach, Roman and Cabbage Lettuce, and even Celeriac. If, however, a fine crop of Carrots is desired, the grower should limit himself to an inter-planting of Roman and Cabbage Lettuces, and not sow any other kind of seed along with the Carrots. The rule for watering Carrots is a little and often. Those for the winter supply may be kept in the ground, the tops being cut off, and the bed covered with a good layer of dry manure; or they may be taken up and laid together in a trench, and covered with the same material. In autumn, the finest are selected for seed-plants, and planted out in a sheltered position or under frames. In March they are planted in the open air, at distances of 14 inches apart. The seed is gathered in July or August. It keeps good for four years. The best varieties, next to the short round Carrot, are the Early Red, Dutch, and the *demi-longue*.

CELERY,

The varieties of Celery in cultivation are the white, the Turkish, the violet Celery of Tours, Celeriac, and the hollow Celery. The first three are cultivated in precisely the same way. For winter Celery, a trench is made $4\frac{1}{2}$ feet wide and 10 inches deep, the soil removed being thrown on both sides. The plants, which have been taken up with balls, are then set in rows, from 6 to 10 inches apart. They are then watered freely, to prevent the leaves withering. When they begin to

sprout, the soil is earthed up between the rows, so that all of the plants are covered except the ends of the leaves. When there is no danger from frost it is better at first to cover the plants with soil to only half their height, and to defer doing this for a short time; but if the weather is uncertain, they should be moulded at once. In earthing up the Celery in the trenches where it is blanched, two workmen take each a rod the length of the bed, and two stakes. These rods are placed one on each side of the rows of plants, so as to keep the leaves close together, and held in this position by driving a stake into the ground at each end. The soil is then thrown up on each side of the row of plants. In very frosty weather a layer of dry manure should be placed next the leaves of the Celery thus moulded.

Seed is gathered from the finest plants of the previous year, which have been transplanted along a wall with a warm aspect. It ripens in August, and keeps good for seven years. Celeric differs from the foregoing kinds in having a very fleshy root, which is developed at the expense of the stalks, these being slender and short. It is sown on a hot-bed in the beginning of March, and planted out in the end of April on an old hot-bed, or in the open ground. It may be interplanted with Carrots, Roman Lettuce, or Endive, and should have a distance of a foot or 16 inches from plant to plant. It requires frequent watering. Some persons remove the leaves, but this is more injurious to the plant than otherwise. A good mulching will be found serviceable. There are two varieties of this plant, the white and the red. The red produces the largest roots, but it is more subject to disease than the other. These roots are used at table in the same way as the stalks of the other kinds, and the seed is obtained in the same manner, but the seed-plants should be placed at a distance from the other kinds of Celery, or they will be hybridised, and the seed consequently worthless.

Hollow Celery, as it is called, is less sensitive to cold than the other kinds. It is sown on a hot-bed in February, and in the open ground in March. If the seed-beds are covered with frames the crop will come in earlier. It is used for mixing with salad and in soups. The seed is obtained in the same way as that of the other kinds.

(To be continued.)

GARDEN STRUCTURES.

ILL EFFECTS OF OVER-HEATING.

HEATING apparatuses of various kinds have of late years been brought to great perfection, and I trust that the ingenious contrivers of them will reap their reward in orders for their boilers, &c., to heat extensive ranges of glass and large public buildings. What I desire to call attention to is the fact that, as a rule, the moderate-sized glass structures, belonging to middle-class villas, are injuriously over-heated; the evils of which are numerous, even where ventilation is ample and judiciously arranged, which is scarcely ever the case. Comparatively robust exotics, which stand a little cold and rough weather occasionally in their native country, instead of becoming more robust, are rendered tender in the extreme; and so far from approaching naturalisation in this country, are removed every year further from it. Insect pests of most kinds increase generally in direct ratio to heat, and are proportionally mischievous, unless kept in check by incessant care and the frequent use of fumigation and insecticides. Since the frost of May last until the middle of October, I have had no heat whatever in any of my small houses, and I have grown therein many of the most desirable of the (so-called) stove plants, not in perfection, but still in clean, healthy, presentable condition, and with the very minimum of trouble and attention. These include *Cissus discolor*, *Fittonias*, a few cool Orchids, among them *Cattleya Harrisoniana superba* (now and for several months past in flower) *Hibiscus Cooperi*, *Stephanotis*, *Passiflora trifasciata*, and *P. kermesina*, *Peperomia argyrea*, variegated Pine-apples, variegated Javanese Screw Pine, *Aechmea fulgens*, *Pteris aspericaulis*, tricolor, various Palms, *Dracænas*, &c. These are freely syringed at suitable times with perfectly cold water, and the front lights are generally open all day. I do not contend that this is the best or even judicious treatment for many of them, but it is convenient for me, and they not only stand it but thrive and do well; and so I grow and enjoy what others, similarly circumstanced as to accommodation, do not attempt. Most plants grown permanently under glass are classed in cultural works and catalogues

as greenhouse and stove plants, and cultivators would do well to remember that the former merely require the shelter which glass affords, and such extra and occasional heat as may serve to keep out frost; while most of the latter do very well with what seems now-a-days considered greenhouse treatment, due regard being had to the specialities of the groups and classes, and their requirements in other respects than that of temperature.

Forcing and the hedding-out system, although defensible under certain circumstances of requirement for public places of summer resort, &c., are costly, troublesome, and unsatisfactory, out of all proportion as to result for any private garden when the owner and his family reside at home all the year round, except, perhaps, during the very short time when the beds are at their best, and when the family are away at some watering place. But the worst of it is horticulture, in its true broad etymological sense, is rapidly becoming an unknown art among gardeners; the permanent is sacrificed to the temporary, the ever-changing beauty of the season's flowers fooled away for a gaudy chromatic display of wearying formality, which invites no close inspection or study. I feel this the more from having been exiled for many years in the tropics; and, with recollections of the garden of my childhood, with its endless succession of perennials, I determined to restore the old and discarded favourites, adding the many new and improved ones of similar character which are now so easily obtained.

Regarding merely the rule, and not certain exceptions, forcing of all kinds is objectionable from every point of view, and its results disappointing, except, perhaps, with respect to the Vine (which will stand a greater amount of abnormal treatment than any other fruit, and, moreover, repays good for evil), the Strawberry, and some other fruits and early vegetables. The forcing of hardy flowering plants can only be the result of ignorance of those tender ones, which, under the protection they absolutely require, would flower at the same time that the *Spiræas*, *Deutzias*, *Primulas*, *Dielytras*, &c., are made to produce a brief sickly bloom, much inferior to what they would naturally produce somewhat later in the open air. It is surprising how little originality there is, and how much copying and imitating on a smaller and smaller scale there is, until soon the copy entirely loses the spirit and meaning of the original, and its only justification rests on the practice of one's neighbours, and the dread of nonconformity.

Headingley, Leeds.

WASHINGTON TEASDALE.

RUSTIC ARCHITECTURE.

Has garden architecture run mad? Is it in its decade? Or has progressive retrogression become the order of the day? Something of the kind must have happened, or why are we daily inflicted with "designs" (pardon the libel on the word) which have nothing to recommend them but their utter vandalism from a structural point of view, and, I am told, utter uselessness for the purposes intended. The last innovation in the way of design which has recently run the round of the horticultural press is the "rustic," and truly the name is appropriate, for it is "rustic" in idea as well as design, and, as far as I have seen examples, exceedingly "rustic" in execution: a species of carpentry run mad. This bubble of glazed sheds I thought had burst some years ago, and why should this exploded absurdity be re-inflated now? Everybody knows that to stand in a draught is, either in winter or summer, the best possible way to catch a cold. And why? because the heat of the body is carried off faster than it can be developed, and hence the blood becomes chilled. If any one doubts this let him place himself under a bridge, railway station, or arch, the Wellington Statue, or Marble Arch; in fact, anywhere where a draught can be created, and he will at once realize the absurdity of increasing heat by mere sheds without sides or ends. What is wanted for the superior culture of tender fruits is longer summers, or, in other words, more heat; but this it is practically impossible to secure by the "rustic" means recommended. If the sides and ends were glazed to within 2 or 3 feet of the ground, and that space filled in with a close woollen matting from Christmas until Midsummer, there might be some chance of success, but under the present "rustic" arrangements such glazed-roofed sheds might as well be called "Summer Refrigerators" as "Tender Fruit Houses." If I recollect rightly, Mr. Rivers said that in his large houses all the ventilation which he desired was that at the sides, and a sash to open over each doorway in the ridge, for the escape of heated air: indeed, he was charmed in January and February with the glorious summer-like temperature which his orchard houses produced. Is this experience of the inventor of orchard houses to be turned thus lightly aside? True, Mr. Fish has said these rustic notions must be regarded more as sources of dryness than of heat, but what dryness can there be where a drifting storm would drive right through the shed? Mr.

Rivers' evergreen walls were far preferable to these "rustic" ones, and yet they did not answer. Mr. Gilbert, of Burghley, in ecstasy with regard to this "rustic" idea for floral fête shelters, says they must have sides and ends, and would be better made in iron. "Right, oh Gilbert!" Banish the "rustic" notion, make them into respectable houses, and they will do for anything.

Exeter.

AN ARCHITECT.

THE GARDEN IN THE HOUSE.

CALADIUMS.

THESE have of late years been extensively used for stove and intermediate house decoration. The beautifully diversified markings of their leaves, combined with their being plants of the easiest possible culture, renders them general favourites. Plants of them in small, say 6-inch pots, grown in not too much heat and near the light, without more shade than is absolutely necessary to keep them from scorching, may be



Caladium Chantini.

used with advantage for table or indoor-vase decoration. Yet even when thus especially prepared for indoor work they must not be kept too long out of heat or they will suffer. For this purpose loam is preferable to peat to grow them in, as it induces a more robust habit of growth. Start the plants into growth any time after Christmas, giving them a good light position, in a house or pit where they can receive 60° or 65° night temperature, with 10° more by day; attend to them well with water, and when they have filled their pots with roots they will be benefited by an occasional application of manure water; syringe them every evening overhead, in order to keep them clear of red spider, which is their worst enemy. As the season advances, gradually inure them to a fair amount of air on all favourable occasions. This will render them less likely to sustain injury when removed from their growing quarters. Towards autumn, when they show signs of going to rest, gradually withhold water, and keep the soil almost dry during their season of rest; but the roots should never remain long in a lower temperature than 60°, or they are liable to rot. Caladiums increase freely by means of cuttings taken off with a heel, or by bits of the roots. T. BAINES.

CULTURE OF PLANTS IN ROOMS.

(Continued from p. 516.)

SHRUBS WHICH SUCCEED BEST IN LOAMY SOIL.

Amygdalopsis Lindleyi.—Of the blooming shrubs lately introduced this is one of the best for forcing. It has a dwarf bushy habit and double flowers of a rosy colour. It has only one fault, viz., that it does not continue long in bloom. It was at first cultivated in gardens under the name of *Prunus triloba*, and is propagated by grafting on the wild Plum. About the middle of December it should be placed in a room protected from frost. After the buds have swollen, it should be removed into a warmer room, where it will soon come into full bloom, so that specimens will be in flower by the middle of January. The shoots of this shrub should not be cut back.

Amygdalus nana.—A dwarf Almond, with single rosy or white flowers.

A. communis fl. pl.—The common Almond with double rosy flowers.

A. persica, fl. pl.—A Peach with double flowers of various colours.

The dwarf Almond is distinguished by its low bushy habit and abundant bloom, but its single flowers are not so effective as those of the other two kinds. In the beginning of January *A. nana* and *A. communis*, and in the beginning of December *A. persica* may be potted for forcing, and later on all three may be removed into a warm room. Pruning and propagation as for *Amygdalopsis A. communis* and *A. persica* are best grown on fan-shaped trellises, as, from their loose habit, their flowers are seen to best advantage in this way. Many handsome varieties of the double Peach have been recently received from China, with white, red, cherry-coloured, or streaked flowers.

Cydonia japonica.—Of this only strong specimens raised in the open air, which have been previously potted in spring, are suited for forcing.

Cytisus Laburnum, with its varieties, and **Cytisus purpureus.**—Of the former only such subjects are suitable for forcing as have been potted when young and grown on in pots for some years. *C. purpureus* may be employed for forcing either grown on its own roots or as low standards grafted in *C. Laburnum*, the grafts being inserted into the bark. This may be prepared for forcing from the beginning of January, and, later on, may be removed into a warm room. They should not be pruned.

Daphne Mezereum and **Daphne Cneorum.**—The pretty red flowers of both these species are very fragrant. They may be potted for forcing in the middle of November, and afterwards removed into a heated room, where they come into bloom by Christmas. Even wild plants of *D. Mezereum*, taken from the woods in autumn and potted, or shoots cut off in December and placed in water in a heated room, will develop flower buds. *D. Cneorum* may be either grown on its own roots, in which case it forms a dwarf shrub scarcely a foot high, or it may be grafted on low standards of *D. Mezereum* or *D. Laureola*. Grown in the latter form the specimens are much handsomer, but in both cases it is best to let the plants remain in pots for a year before they are forced. Neither kind should be pruned.

Deutzia scabra and **Deutzia gracilis.**—Both of these white-flowered plants, which are allied to *Philadelphus*, are particularly adapted for forcing. The first was described by Siebold and Zuccarini as *D. crenata*. When intended for forcing both should have been previously potted in spring, and late in autumn, before the frost arrives, should be brought into a room where the temperature is kept above freezing point. They should not be pruned in autumn, but by being pruned in spring and pinched in summer, they will form a strong growth of shoots. In the middle of December they may be placed in a cool room, and afterwards removed into the coolest part of a heated room. They may be forced into bloom as early as January, but those plants which are not placed in the warm room until the middle of February or in March, or have been allowed to remain in the cool room, produce a much more abundant and finer bloom. *D. gracilis* is also a good subject for forcing. We cannot recommend any of the other species for this purpose, nor any of the species of *Philadelphus*, although the latter were formerly and still are occasionally, forced. Propagated by cuttings and division.

Diervilla amabilis and **D. rosea.**—Both these handsome red-flowered Chinese shrubs are well known in gardens under the names of *Weigela amabilis* and *W. rosea*. They are dwarf shrubs which vie with each other in beauty, whether planted in the open air or used for forcing. When employed for the latter purpose, a satisfactory result will only follow when the plants have previously ripened their wood well in the open air. Their treatment is similar

to that of the Deutzias, but they should not be brought into the room until the beginning of January, and after they have received a little frost.

Kerria japonica, D.C. (Corchorus japonicus, Thbrg.).—A Japanese shrub with yellow flowers, the double-blossomed variety of which was formerly known in gardens as *Corchorus japonicus*. This name, however, is now applied to the single-flowered kind as well. It has long been a favourite subject for forcing. In spring the old shoots should be cut back, so as to form pretty bushy specimens. In the middle of December they should be placed in a room sheltered from frost, but should not from that time be any further pruned or pinched. They may be removed into a warm room in from two to four weeks.

Magnolia Yulan, Desf. and M. obovata, Thbrg. (M. purpurea of gardens).—Both these, with their varieties and hybrids, are very handsome plants, the former with large white, and the latter with large red flowers. They are seldom employed for winter flowering, as they require to be planted in rather large pots, and also, being somewhat difficult to propagate, are expensive plants to purchase. If placed in a cool room in the beginning of December, they may, with a temperature of from 36° to 43° Fahr., be brought into bloom in February and March. They should neither be pruned nor placed in a warm room. They are propagated by grafting on their own roots, by layers and by seed; *M. purpurea* is also increased by separation of rooted suckers.

Pæonia Moutan (P. arborea, Don).—This plant, with its numerous handsome double-flowered varieties, is one of the most striking and effective subjects for forcing. The longer the specimens have been previously potted, and the greater the care bestowed upon them during their summer culture, the better will be the result when they are forced. They should not be pruned, and should be somewhat exposed to the frost before they are taken into the cool room, where the temperature should be kept above the freezing point. In order to make a stronger growth in January and February they should not be removed into heated rooms, but should be kept in a temperature of from 43° to 45° Fahr., which may be obtained by placing them in a room adjoining the heated room, or in one well exposed to the sun. They may be forced annually, and are deserving of the greatest care. They are propagated by cuttings or by cleft-grafting in winter on their own roots, or on those of the herbaceous kinds. Specimens which are placed in a temperately warm room in March and April produce the finest and most abundant bloom.—*E. Regel.*

(To be continued.)

Gymnothrix latifolia.—Amongst Grasses for table decoration, it will be difficult to find a nobler or more Palm-like form than this fine perennial species presents. I saw a good clump of it at the seed farms of Messrs. J. Carter & Co., at St. Osyth, this summer, and found it again in pots at their Forest Hill Nurseries, from whence I obtained several plants. These were pulled to pieces, and each cane repotted into a 48-sized pot; they took no harm from this rough usage about three months ago, and have ever since been doing good service in conservatory decoration, when not wanted for the table. The Grass came from Monte Video, and is said to need protection through our winters. Treated as a pot-plant, I expect to find it will retain its broad pale green leaves in good form for a long time. The arching disposition of its foliage reminds one greatly of an elongated-leaved *Cocos* or *Geonoma*. It is said to grow 10 feet high. I presume seed of it can be obtained. If so, by sowing it in succession, a stock of it of any required size might be kept up for conservatory or table decoration. I cannot too strongly recommend it.—*W. T. P.*

NOTES AND QUESTIONS ON THE GARDEN IN THE HOUSE.

Acacia lophantha.—This is a beautiful plant for windows. It grows freely in the ordinary temperature of a sitting room, and in habit unites the delicate green of the Fern with the graceful look of the Palm. It grows freely from seed, which the plant bears profusely when old, but cuttings make the dwarfest and nicest window plants.—*F. W. B.*

Double White Violets.—For some time I have been anxious to procure some double white Violets, and three weeks ago when walking up Oxford Street I saw, to my great joy, a girl selling bunches of purple Violets, each with one lovely double white one in the centre. As a matter of course, I bought as many as I could carry. After they had been in water for a few hours, the perfume turned out to be atrocious, and appeared to proceed from the double white one, which I turned out to be a collection of *Chrysanthemum* florets ingeniously mounted on wire. Let me hope that some other admirer of double white Violets has been taken in in the same manner, and "chaffed" as unmercifully as I have been.—*E. P., Botany Cottage.*

GARDENING ROUND LONDON.

(DURING THE PRESENT WEEK.)

BY OUR SPECIAL REPORTER.

PRIVATE GARDENS.

Flower Garden.—Deciduous and also some evergreen shrubs are being yet transplanted. In flower borders *Pyrethrum uliginosum* and *Chrysanthemums* that have done flowering are being cut over near the ground. Plants of variegated Thyme used for embroidery or for edgings for summer flower-beds are now lifted, divided, and transplanted in lines as edgings to shrubberies or in rows in the reserve garden, to be again planted out in spring. Stools of *Viola cornuta* are being divided and the divisions inserted in a warm border at the foot of a wall, where if necessary they are protected from frost by means of a thin covering of rank litter. This operation, although better performed early in spring, is done now, because it might get neglected if left till that season. Where spring flowering plants are too thick they are being thinned, and the thinnings employed for embellishing some other part of the garden. Beet in some cases has retained its foliage as yet almost unimpaired, but solitary or straggling plants of it in shrubbery borders and similar places would be better removed, as, in such situations, they look ragged. The tops of Rice-paper plants have succumbed to the past damp and cold weather, but their roots, protected by means of a mulching, will probably winter safely. Bulbs of Japanese Lilies are also mulched, to protect them from frost, as are likewise those of others of the more tender bulbous plants. Some leaves, litter, or earth are also placed about the necks of *Tritomas*. In frosty weather a mat is thrown over *Fremontia californica*, but it is removed on all favourable occasions. Bamboos isolated on lawns look fresh and attractive; and amongst hardy ornamental plants of a less conspicuous character, few can be compared with the common hardy variegated *Iris fætidissima*, whose beautifully white variegated sword-shaped leaves contrast nobly with the foliage of the carpet beds from which they spring. Air is freely admitted to bedding plants in frames, and on keeping them dry depend the chief chances of success.

Conservatories.—To plants mentioned last week for indoor decoration may be added *Cassias*, *Coronillas*, *Fuchsias*, *Heliotropes*, *Bouvardias*, *Statice macrophylla*, *Andromedas*, *Linum flavum*, *Zieria Smithii*, *Oldenlandia Deppeana*, *Leschenaultias*, common Broom (forced), and others. Dutch bulbous plants are being brought forward in succession, the bulk of them being underneath cocoa-nut fibre under stages. Any required earlier than they would naturally come in flower are subjected to a higher temperature. *Chrysanthemums* done flowering are removed, cut over, and one pot of each is placed in cold frames, or in some instances, planted out at the foot of walls. Plants of *Lilium speciosum* not previously potted are being done now, and either placed in frames or under stages in greenhouses, where they can be kept dry. *Nerines* are placed on side shelves and are kept moderately dry. *Hæmanthus* are potted and kept in positions near the glass in warm corners. *Tropæolums* also occupy a warm and light situation; they are kept pretty moist, and are trained so as to well cover the base of the trellises. If at once trained towards the top and afterwards led downwards they fail to cover their trellises so effectually as they otherwise would do, and consequently do not prove so attractive. *Cyclamens* for late flowering are kept in cool airy frames near the glass. Plants for forcing are being potted and set for a time in a cold frame to recruit themselves before being subjected to a higher temperature. Amongst them are *Dielytra spectabilis*, *Lily of the Valley*, *Spiræa filipendula*, *Hoteia japonica*, *Deutzias*, *Ghent* and *Indian Azaleas*, *Lilacs*, *Indian Rhododendrons*, *Weigelas*, *Roses*, *Hellebores*, *Acacias*, and others. Spring struck plants of *Oleander* are placed in a warm pit in order to induce them to produce and perfect their flowers. *Callas* are liberally supplied with water, and are kept in the forcing house. *Lachenalias* are set near the glass in cool houses. *Hydrangeas* losing their foliage are placed in cold frames, old ones under stages, and very young ones in front next the glass.

Stoves.—Both atmospheric and root moisture here is now considerably lessened, sufficient only being given to maintain the plants in health. Plants of *Alocasia macrorhiza* are laid on their sides under stages. *Caladium esculentum* is also treated in a similar manner, and where roots of this fine-leaved plant have been taken up from the sub-tropical garden, they are placed thickly together under the stages and are covered with some cocoa-nut fibre. *Statice* coming into bloom are top-dressed with cow manure. *Hebeclinium ianthinum* is liberally supplied with water; although the roots of this plant creep over the edge and down the outsides of the pots, the plants, unless very young, are not repotted. A slight syringing is applied overhead at midday on fine days. Plants of *Hibiscus sinensis* are cut well in, repotted, and plunged in a brisk

bottom heat, in order to start them afresh. Gardenias showing flower are also plunged in the warmest corner of the house and well watered.

Indoor Fruit and Forcing Department.—Fruit trees in pots are stored closely together in the open orchard houses or vineries, and a mulching of leaves or rank litter is placed between and over the pots to protect them from frost and drought. Vines, Peaches, and Nectarines are being pruned, and the trees painted with a mixture of sulphur, soot, tobacco-water, Gishurst's compound, and clay, sufficient to give the mixture the consistency of paint. From amongst the Vine prunings the best ripened pieces are selected, cut into short lengths, inserted in soil, and kept for cuttings, or for scions for grafting. After being pruned the rods are unfastened from the rafters, and bent down until they have fairly started, when they are again tied up over a bed of fermenting material, which has been placed in the house to encourage growth. Seakale roots for succession are introduced weekly into the Mushroom house. Rhubarb, Chicory, and Dandelion roots are also forced in Mushroom houses. Asparagus roots are more commonly forced on dung-beds. Roots of Mint are potted, and placed in vineries at "work." Radishes are sown on a slight hotbed, and Mustard and Cress are put in according to demand.

Hardy Fruit and Kitchen Garden Department.—Wall tees are being nailed, and in cases in which old nails are used again, they are made red hot and plunged in linseed oil. No old shreds are employed a second time without being steeped in boiling water, in order to destroy insects. All sorts of hardy fruit trees except Figs and Nuts are being pruned. A mulching of manure is placed over the roots of newly-planted trees. Mats used for covering Fig trees are loosened a little, to permit air to circulate amongst the branches while the weather continues so favourable. Planting fruit trees and bushes, both large and small, is still being done. To Peas and Beans that have appeared above-ground a little earth is drawn. Jerusalem Artichokes are lifted as required, and in some cases altogether, and stored, so that the ground they occupied may be got ready for other crops. Parsley beds are matted to protect them from frost. The latest plantation of Celery is being earthed up. Autumn-sown Onions are weeded, and some transplanted; and on damp days Pea-sticks, labels, &c., are prepared.

NURSERIES.

Indoor Department.—Rooted cuttings of *Encocaria bicolor* are being potted off into 60-sized pots, in a compost of leaf-mould, yellow loam, and silver sand. *Grevilleas* are topped, plunged in heat, and their side shoots are used as cuttings, concerning the striking of which there is some difficulty; therefore when seeds are attainable it is best to use them. They germinate freely, and plants come true to their kind. *Fuchsias* are being propagated in brisk heat. Cuttings inserted two months ago are now fine established plants in 48-sized pots. Plants of *Hebeclinium ianthinum* are being repotted; they form a good many roots without exhibiting much sign of growth at the top. Such of the autumn cuttings of *Camellias* as have become well rooted are potted off singly into thumb pots. *Bouvardias* are increased by means of roots, a small piece being placed in each pot. *Pelargoniums* are brought into a high temperature, to encourage them to make growth for cuttings. Other soft-wooded plants are being increased. *Lobelias*, *Stocks*, &c., are sown in boxes in an intermediate pit. *Succulents*, including *Sedums*, *Sempervivums*, *Pachyphytums*, *Kleinias*, &c., are increased by means of leaves, each of which, as soon as struck, is potted singly into thumb pots. *Echeverias* are mostly increased from seed, and the dwarf varieties from side shoots, of which a great many are commonly produced. Plants of *Cyperus alternifolius* are being divided and each division potted singly in small pots plunged in bottom heat in a close, moist, warm pit. Rooted cuttings of *Theobroma cacao* are being potted singly, and hand-lights or bell-glasses placed over each. Pieces of the roots of *Clerodendron fallax* are inserted around the edge of small pots, and plunged in bottom heat; they soon break and form nice plants. Seedlings of *Xanthochymus pictorius* are being potted singly into large 60-sized pots, in a compost of leaf-mould, yellow loam, and sand. Rooted cuttings of *Gastrolobiums* are also potted singly, and kept in a brisk heat. Cuttings of *Pavetta borbonica* are being inserted in sandy peat surfaced with pure sand; their leaves are supported by means of small wooden pegs. The pots containing the cuttings are plunged in a brisk root temperature under a handlight in a stove or propagating pit. Cuttings of *Pimelea decussata* are inserted thickly in pots, over which a hand-glass is placed; the pots are then placed in an intermediate house, and plunged in a very gentle root temperature. These are commonly used for stocks, on which are grafted the finer kinds, such as *spectabilis* and *Hendersonii*. *Quercus glabra*, *Rhododendron Edgeworthii*, and many other plants are similarly treated. Young plants of *Anthurium Scherzerianum* raised from seed in

spring are now plunged in cocoa-nut fibre near the glass; in this position they thrive admirably. A few plants of *Primula cortusoides amœna* are being shaken out of their pots, repotted, and started into growth; the majority of these, however, are yet kept quite dry in some cool airy house.

MARKET GARDENS.

Raspberry bushes, in lines 4 or 6 feet apart and 18 inches plant from plant, are being pruned and thinned. From three to six of the best shoots are left to each stool, and they are cut back to about 3½ feet in height. During the summer they are not staked, but a ligature of matting or of rope yarn is tied around them near their tops. Red Currant bushes are pruned in pretty hard; if under fruit trees only about six branches are left to each plant. Gooseberry bushes are likewise being pruned, an operation for which time could not be spared in spring. Old Moss-covered and unfruitful bushes are removed, and are replaced by young and fruitful ones. Bushes raised from cuttings layered last spring are lifted and transplanted, either permanently or in lines 18 inches apart. The best of the prunings are saved for cuttings, which are tied into bundles, and inserted in the ground, to be planted singly when ground is prepared for them. Brussels Sprouts are still excellent, as is also the late sprouting Broccoli. Cabbage plants, where any yet remain, are being planted out between rows of fruit bushes; but such plants are scarce this season. The ground between red Cabbages that were planted 3½ and 4 feet apart after late Potato crops, with two lines of common Cabbages between them, is stirred now and then, in order to encourage growth. Parsley from early autumn sowings is now being transplanted, and placed in shady spots, in lines 8 inches apart. Onions are transplanted in lines from 6 to 8 inches apart. Radish beds, 4 and some 5 feet wide, have been made, sown, and covered with 3 inches thick of rough litter. Where Asparagus ridges have not been levelled, that operation is now being done whenever the weather is dry, a somewhat rare event lately. Some well-decayed manure is placed over the roots of select plants of Asparagus, and some soil is laid over the manure to keep it in place. Lime is being dusted over Lettuces and Endive, to preserve them from slugs. Fresh beds of Rhubarb and Seakale are being made for forcing. Seakale for coming in naturally in spring is being earthed up. Some rough litter is being placed around Globe Artichokes to protect them from frost.

Garden Clerk at Kew.—In your paper of December 7th I observed an article under this heading, in which the writer states that "There is not a man in the country 'under thirty' competent to do the work." Well if a man has been educated solely for one trade or profession from boyhood, one would imagine that he would thoroughly understand his business before thirty, or he must indeed be a dullard. There are hundreds of men in every profession and trade who have been wisely placed in positions where their elders have been rejected, not for want of time for experience, but for want of experience itself, and for want of a proper knowledge of their business. Many of Napoleon I.'s best generals were, I believe, under thirty, and I could name many men among the most distinguished that have lived who did great work before they reached that age. I may state that I am past thirty years of age myself.—RALPH R. HANDY.

M. COLLAS, of Paris, comments in *Les Mondes* of December 12th, on M. A. Lallemande's paper on the blue colour of the atmosphere, in which it was attributed to a change of refrangibility due to a partial absorption of the chemical or ultra-violet rays. In 1870 M. Collas, in an article in *Les Mondes*, attributed the blue colour of the Lake of Geneva and other waters to the quantity of silice held in solution, which is brought down by the tributary streams from the strata through which they pass. Numerous observations since have induced him to believe that the blue colour of all the water of the globe is due to the same cause. The air everywhere always contains more or less of moisture due to evaporation from the water of the earth; the water thus evaporated always contains a greater or less quantity of extremely fine insoluble particles. Silice, says M. Collas, is one of the most common insoluble substances in nature, and through evaporation, performs the same function in the blue sky that he believes it does in the blue waters of the earth. He believes his theory is confirmed by the intense blue of southern skies, where evaporation is so much greater than in the colder north.

A TRAVELLER asked an emaciated Georgian if the climate of the rice swamps was unhealthy. "Wa'al no," replied the royal native, "'tain't unhealthy; we have the fever and ague all the time in these parts, but then we enjoy a powerful under-tow of health."



